Dr.M.H.M.G.N.H.Library
630.6 USD
4959
4959
630.6 USD

ACC NO - 4959

GOVERNMENT BOTANIC GARDENS,
LAL-BAGH, BANGALORE.
LIBRARY.
Section.....
No.....
Date.....

630.6
USDA

1679

Issued May, 1923.

U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY.

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1921.

(No. 66; Nos. 52306 to 52854.)

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1923.

Dr.M.H.M.G.N.H.Library
630.6 USD
4959

CONTENTS.

	Page.
Introductory statement	1
Inventory	7
Index of common and scientific names	85

ILLUSTRATIONS.

	Page.
PLATE I. An avenue of the Siamese maikrabao trees, which produce an oil very similar to that of the chaulmoogra tree. (*Hydnocarpus anthelminthica* Pierre, S. P. I. No. 52468)	32
II. The tocte, a native Ecuadorian walnut tree. (*Juglans* sp., S. P. I. No. 52611)	32
III. The chamburo, an interesting relative of the papaya. (*Carica* sp., S. P. I. No. 52716)	66
IV. Fruits of the babaco, one of the most valuable species of Carica cultivated in Ecuador. (*Carica* sp., S. P. I. No. 52721)	66
V. A red-fruited variety of the Andes berry. (*Rubus glaucus* Benth., S. P. I. No. 52734)	66
VI. The talipot palm of tropical Asia. (*Corypha umbraculifera* L., S. P. I. No. 52802)	66
VII. The chaulmoogra tree of Burma. (*Taraktogenos kurzii* King, S. P. I. No. 52803)	78
VIII. Fruits of the chaulmoogra tree. (*Taraktogenos kurzii* King, S. P. I. No. 52803)	78

Government of Karnataka
Dr. M. H. Marigowda National Horticulture Library
Directorate Of Horticulture Lalbagh,
Bangalore - 560 004

ACC. No. 4959

CALL No. 630 · 6 US DA

and F. Albert, consulting forester to the Chilean Government, has sent in three of these species, the coigue (*N. dombeyi*, No. 52592), the roble (*N. obliqua*, No. 52593), and the rauli (*N. procera*, No. 52594), as well as a number of other Chilean trees and shrubs, including the tique (*Aextoxicon punctatum*, No. 52556), the beautiful tara (*Caesalpinia pectinata*, No. 52587), and an attractive liliaceous shrub (*Philesia magellanica*, No. 52596), remarkable in its ability to withstand the fumes from copper-smelting furnaces.

The growing interest in hybrid trees for forestry work as well as for street tree planting will make the hybrid poplar (*Populus rasumowskiana*, No. 52705), a cross between *P. nigra* and *P. suaveolens*, and the hybrid walnut (*Juglans intermedia vilmoreana*, No. 52681), sent in by Vilmorin-Andrieux & Co., of value to parks and forests.

J. F. Rock, our agricultural explorer, secured in Bangkok, Siam, seeds of the giant forest tree *Castanea diversifolia* (No. 52387), which bears quantities of edible chestnutlike nuts; and from the same region he obtained *Quercus junghuhnii* and other species of oaks (Nos. 52440 to 52448), bearing sweet edible acorns in great clusters, which might take the place of the scrub oaks of the pinelands of Florida.

We are so accustomed to think of the forests of Africa as trackless and inexhaustible that to learn of the threatened extinction in Rhodesia of the magnificent Milanji cypress (*Callitris whytei*, No. 52807), which grows to 140 feet in height at altitudes of 10,000 feet, comes as a distinct shock. It should make us realize, perhaps, that the virgin forests of the whole world are threatened by fire and the strangling grasses which man is taking into them. At least an effort can be made to save this cypress from extinction.

Grains.—The rise of plant-breeding institutions is a thing of recent times, and it is encouraging to note that already a free exchange has begun of the seeds and plants which are being produced by them in various countries. From the two foremost institutions in the Netherlands, those at Groningen and Bussum, have been received valuable collections (Nos. 52818 to 52840, 52842 to 52844) of their best selected strains of wheat, oats, barley, and flax, which can scarcely fail to be valuable in some of the cooler summer regions of America; whereas from the famous Australian plant breeder Pridham have come nine pure-line selections of the Hard Federation wheat (*Triticum aestivum*, Nos. 52557 to 52565) which has proved to be an improvement over the old Federation and which has been grown commercially in Australia since 1914 because of its equal yields and the better milling quality of the grain. Professor Ducellier, of the School of Agriculture of Maison Carree, Algiers, has presented a collection of 11 varieties of Saharan wheats (*Triticum* spp., Nos. 52546 to 52556)

with yields comparable to the best European varieties. What will happen to the black rice of Burma (No. 52751), which Mr. Rock found and used with keen relish as a breakfast dish at Moulmein, time only can decide. He declares it is a grain especially prized in Siam and when served as he used it is particularly delicious. What might it be when puffed?

The fundi grass of Sierra Leone, *Digitaria exilis* (No. 52736), which is grown by the Nigerian tribe as a supplemental food grain, may prove too expensive for production on a large scale because of the small size of its kernels; but, like the Abyssinian teff, it deserves to be thoroughly investigated as having possibly some particular use for invalids.

Forage and fodder plants.—Fodder trees have received little attention in this country, though in the drier parts of India and Australia much use is made of them. Two new ones from New South Wales, the leopard tree, *Flindersia maculosa* (No. 52798), and the myall, *Acacia pendula* (No. 52800), deserve study by the ranchmen of the extreme Southwest, where fodder grasses are scarce, since in years of unusual drought these trees can tide over the stock until rains come. They have nutrient values of 48.5 and 29, respectively, and will stand periods of prolonged drought.

Vegetables.—Why should we not use the old-fashioned potherb Good King Henry, *Chenopodium bonus-henricus* (No. 52789)? It is extremely hardy and two weeks earlier than asparagus produces shoots that are easily blanched and have a delicious flavor. It is related to our own lamb's-quarters, *C. album*, which is also excellent.

Tomato growers may be interested in Mr. Harrison's giant tomato bush (No. 52334) which in the frostless region of Burringbar, New South Wales, produced in 12 months a plant 16 feet across and 11 feet high that bore 100 dozen fair-sized fruits.

Nut-producing plants.—*Telfairia pedata* (No. 52450), a cucurbit growing like a liana in the tropical forests of East Africa and producing immense fruits which are filled with large flat edible seeds, although brought to the attention of horticulturists in 1824 seems nowhere to have been cultivated. It deserves a thorough trial. There is something alluring in the idea of replacing the scrub oaks of the pinelands of Florida with the deciduous oaks of Siam (Nos. 52440 to 52448) which produce great masses of sweet edible acorns.

Dye and tannin plants.—Mr. Rock's account of the black dye made from a tropical species of persimmon, *Diospyros mollis* (No. 52510), a substance whose color is so prized by the Chinese that they ship into Siam yearly over $800,000 worth of silk and pay duty on it in order to have it dyed there, should attract the attention of the manufacturers of dyes. Seed of the tree to grow in Porto Rico and Hawaii was secured.

The currebau-sevil (*Piptadenia cebil*, No. 52504) of Bolivia, which, according to Mr. Meschrutz, yields one of the best tanning materials, is a tree adapted to growing on stiff clay soils where little rain falls.

Medicinal plants.—In this inventory is described the chaulmoogra oil-producing tree, *Taraktogenos kurzii* (No. 52803), to secure which J. F. Rock made his expedition into Siam, Burma, and Assam. He also collected *Hydnocarpus anthelminthica* (No. 52465), the Siamese maikrabao tree, and *H. castanea* (No. 52514), one of the kalaw trees of Burma, from both of which similar oils are obtained. Where in America these trees can be grown is a problem to be solved by trial only. The Hawaiian Islands, Porto Rico, the Philippines, and the Canal Zone are presumably the logical places for them, and it is in these regions, too, that there is the keenest interest in the cure of leprosy. However, it is contemplated that specimens will be sent to other countries in order to make sure that these valuable drug-producing trees find a congenial home and come into cultivation where they can furnish an adequate number of seeds to supply the demand created by the new discoveries in the methods of treating this loathsome bacterial disease.

Fruits.—At first thought there does not seem to be a very large number of different kinds of fruits in cultivation by civilized man, but there really are a great many. The introductions for the three months covered by this inventory include, for example, 16 rare or little-known species or varieties. Wilson Popenoe introduces the capulin, or Ambato cherry, a form of *Prunus serotina* (No. 52720) which, though from a region of little frost, bears prodigious crops of fruits as large as the Early Richmond cherry and may prove to be the southern cherry of the future. He finds the Andes berry, *Rubus glaucus* (Nos. 52733 and 52734), as good as any of our cultivated species. The babaco (No. 52574) and the chamburo (No. 52721), both interesting species of Carica from Ambato, Ecuador, have a degree of hardiness which should insure their success in California, and although they are quite different from the true papaya, being edible only when cooked, they should prove valuable additions to our horticulture either directly or through hybridization. They will probably not compare directly with the Solo papaya of Hawaii (No. 52620), a selected uniformly shaped fruit of excellent quality which is recommended by the territorial experiment station for general cultivation because of its hermaphrodite flowers and the fact that the variety comes reasonably true from seed.

An attractive Syrian species of Sorbus, *S. trilobata* (No. 52600), Professor Poirault presents as one bearing fruits suitable for preserves; and M. Auguste Chevalier, of Paris, has sent us the seeds

JANUAR

phus lemoinei, Nos. 52649 to 52657), which deserve a place in every nursery of ornamental plants in America.

The botanical determinations of these introductions have been made and the nomenclature revised by H. C. Skeels and the descriptive and botanical notes arranged by G. P. Van Eseltine, who has had general supervision of this inventory. Miss Patty Newbold has assisted in the compilation of descriptive notes.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., November 20, 1922.

INVENTORY.[1]

52306. STACHYS SIEBOLDI Miquel. Menthaceæ.

From Paris, France. Tubers purchased from Vilmorin-Andrieux & Co. Received February 1, 1921.

A perennial Japanese plant up to 1½ feet in height, cultivated for its slender white tubers, which are eaten as salad, fried, and in many other ways. Cultivation is easy. The soil should be light and the plants spaced a foot apart. The tubers are dug in November or later. They shrivel on exposure to the air and should be taken only as wanted. (Adapted from *Catalogue, Vilmorin-Andrieux & Co.*)

52307 to 52309.

From Cali, Valle, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received January 3, 1921. Quoted notes by Mr. Popenoe.

52307. AGATI GRANDIFLORA (L.) Desv. Fabaceæ.
(*Sesbania grandiflora* Poir.)

"(No. 520a. November 22, 1920. Herb. No. 1205.) Seeds of *regenerador*. A handsome flowering tree cultivated in the lower portion of the Cauca Valley, especially in the vicinity of Cartago (whence these seeds) and Roldanillo. It reaches a height of about 25 feet and has handsome pinnate foliage. The pure-white flowers, 2 inches long, are shaped much like those of Clianthus and something like those of Erythrina. A rose-colored form is also cultivated, but I have been unable to get seeds of it. The tree is remarkable in that it commences to flower when not more than 3 feet high. It is a rapid grower, and when properly trained (it is inclined to be rather tall and slender in form) it is shapely and very attractive. I believe it would be a distinct addition to the ornamental trees of southern Florida."

For previous introduction, see S. P. I. No. 38656.

52308. BROWNEA GRANDICEPS Jacq. Cæsalpiniaceæ.

"(No. 519a. November 22, 1920.) Seeds of *arbol de la Cruz*, a tree cultivated in a dooryard at Cartago, at an altitude of about 2,900 feet. This magnificent flowering tree, native to the Magdalena Valley in Colombia, is a common ornamental in the Cauca Valley at altitudes of 2,500 to 4,000 feet. It is about 20 feet in height and produces flame-

[1] It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

52307 to 52309—Continued.

scarlet flowers in compact clusters (they could almost be termed heads) 6 to 8 inches long and broad. While this plant is tropical, the fact that it is grown at Guaduas makes me think that it may succeed in southern Florida."

For previous introduction, see S. P. I. No. 51796.

52309. CARICA sp. Papayaceæ.

"(No. 512a. November 22, 1920.) From a dooryard in Ibague, Department of Tolima, Colombia, at an altitude of about 4,200 feet. Seeds of a distinct species of Carica which I have not seen in Cundinamarca. At first sight I took it to be *C. candamarcensis* (the species common in Cundinamarca), but on closer examination the leaves proved to be much more deeply lobed and the fruit altogether distinct in character, though of about the same size and form. The plant is common in the region between Ibague and the Cauca Valley, being found at altitudes of 4,000 to 6,000 feet. It reaches about 15 feet in height, often branching near the base to form several stems. So far as I have seen, the plants are unisexual, as in *C. candamarcensis* and, normally, in *C. papaya*. The fruits are broadly oval to elliptic, 3 to 5 inches long, and deep yellow when fully ripe. The flesh is white and has a faint applelike odor. The seeds are scattered through a white pulpy mass, which does not adhere to the wall of the cavity but is attached at the basal end. The flavor of the flesh is rather acid; it is eaten only when cooked, as that of *C. candamarcensis* in Bogota.

"I do not know how hardy the plant may be. It seems likely that it will resemble *C. candamarcensis* in hardiness, and in this case it will be of interest in connection with papaya breeding in Florida and California."

52310 to 52314. ALLIUM spp. Liliaceæ.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received February 1, 1921. Quoted notes from Catalogue of Vilmorin-Andrieux & Co.

A collection of vegetables introduced for experiments in diseases of truck crops and for vegetable breeding experiments.

52310. ALLIUM ASCALONICUM L. **Shallot.**

"*Echalote de Jersey.* Bulbs of a variety which is larger and more highly colored than the ordinary shallot and a very good keeper."

52311. ALLIUM CEPA L. **Onion.**

"*Rocambole.* Bulbs of a variety from Spain. Plant in October or November, or in February."

52312 to 52314. ALLIUM FISTULOSUM L. **Welsh onion.**

52312. "*Ciboule commune.* Bulbs of the variety most cultivated."

52313. "*Ciboule blanche hative.* Bulbs of an early and less pungent variety."

52314. "*Ciboule vivace* (*Ciboule de Saint-Jacques*). Bulbs of a variety which does not produce seeds."

52315 to 52317. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Cali, Valle, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received January 3, 1921. Quoted notes by Mr. Popenoe.

52315 to 52317—Continued.

52315. "(No. 524. November 22, 1920.) Tubers of an excellent potato grown in the mountains near Cali. The tubers attain large size compared with other Colombian potatoes and are oblong or oval, distinctly compressed, and light brown in color. The surface is remarkably free from eyes, being in fact nearly smooth. The flesh is white and of good quality. I am told by some people that this is not a native variety, but one which has been introduced into the valley fairly recently. In any event, it is worthy of trial in the United States by those interested in potato breeding."

52316. "(No. 525. November 22, 1920.) *Papa criolla* (native potato) from the Cali market. Tubers of the common yellow-fleshed potato of the Andes, a variety which produces tubers of small size but remarkably rich flavor. This variety is said to be very early and to be suited to cultivation in a warmer climate than others. The tuber is round, commonly not over 3 inches in diameter, deep rose colored, with very deep eyes, a very thin skin which peels readily from the boiled tuber, and mealy flesh of rich-yellow color and excellent quality. It appears to me a very interesting variety for trial in the United States."

52317. "(No. 526. November 22, 1920.) Tubers of *papa criolla* (native potato). From the Cali market. A round to oblong, medium-sized, brown-skinned, deep-eyed potato from market. It appears practically identical with No. 525 [S. P. I. No. 52316] except in the color of the surface. The flesh is yellow, of excellent quality, and of remarkably rich flavor."

52318 to 52329.

From Coggeshall, Essex, England. Seeds presented by John K. King, of King & Sons. Received January 3, 1921. Notes adapted from King & Sons' "Pedigree Seed Wheats," 1920–21.

52318 to 52327. TRITICUM AESTIVUM L. Poaceæ. **Common wheat.** (*T. vulgare* Vill.)

52318. *Benefactor.* This wheat ripens fairly early and on good soils produces a fair yield. The ear is of medium length, with rough chaff and white plump grains of good size. The straw is very strong and of medium length. (P. 7.)

52319. *Essex Conqueror.* A new wheat which yields 80 bushels per acre. The well-set compact ears, some nearly 6 inches long and 5 to 7 chested, are well filled with bold plump red grain of superior milling properties; the chaff is white. The strong stiff straw is of medium height and upstanding in the most severe weather. (P. 2.)

52320. *Iduma Red.* A red wheat which produces good upstanding straw and fairly large ears; the grain is of excellent milling quality, and the chaff is white. (P. 7.)

52321. *Improved Double Stand-up White.* This wheat has a short stiff straw and a rather short ear well set with pale-white grain. (P. 7.)

52322. *John Bull.* An early strong wheat which yields as much as 60 bushels per acre. The straw reaches a height of 5 feet or more, and the large heads with white chaff are closely set with the finest large red grain, which is of high value for milling. (P. 3.)

52318 to 52329—Continued.

52323. *Little Joss.* A cross between *Squareheads Master* and *Ghirka*, raised by Professor Biffen. This variety is said to be rust resistant, and the quality of the grain is unquestionably good; the ears are long and somewhat pointed, which quality in our judgment detracts from its cropping properties. (P. 7.)

52324. *Marshal Foch.* A fairly early wheat, ripening about the same time as Victor, with white chaff and pale-red grain, said to be of good milling quality. The strong stiff straw is of medium length. (P. 7.)

52325. *Reselected Victor White.* A fairly early wheat which gives excellent results on most soils. The straw is of medium length, and the square compact ears bear medium-sized grain. (P. 7.)

52326. *Snowdrop White.* A white wheat, something over 5 feet high and very level, yielding up to 80 bushels per acre. The square thick ears are of good length. The pearly white grains are compactly set and often 5 or 6 chested; it is eagerly sought after by millers. The straw is very strong and free from rust. (P. 4.)

52327. *White Marvel.* Of the two, we consider this variety to be better than *Red Marvel.* It possesses all the characteristics of *Red Marvel*, but the grain is white. The straw is stiff, and the ear, although long, is generally fairly thick chested. The variety is exceedingly valuable for spring sowing. (P. 7.)

52328 and 52329. TRITICUM TURGIDUM L. Poaceæ. **Poulard wheat.**

52328. *Percival's Red Cone.* After careful experiments on our Experimental Farms, we do not recognize any great difference between this and a good stock of the ordinary *Cone.* (P. 7.)

52329. *Early Red Cone.* This variety is said to ripen 10 days before ordinary *Rivetts*, but we did not find it so early. The heads are close and compact, and the straw is somewhat shorter than *Rivetts.* (P. 7.)

52330. DATURA METEL L. Solanaceæ. **Datura.**

From Manila, Philippine Islands. Seeds presented by Sr. Adn. Hernandez, Director of Agriculture. Received January 5, 1921.

"This Asiatic plant, described as a distinct species by Nees, is regarded by some botanists as a white-flowered form of *Datura metel.* It is identical with the plant known to the Japanese by the name 'Chosen Asagao,' or 'Korean morning-glory.'" (*W. E. Safford.*)

52331. EUTERPE sp. Phœnicaceæ. **Assahy palm.**

From Para, Brazil. Seeds presented by Dr. Paul Le Cointe, director, Commercial Museum. Received January 6, 1921.

"Fresh seeds of the *assahy palm.*" (*Le Cointe.*)

52332. COLOCASIA ESCULENTA (L.) Schott. Araceæ. **Taro.**

From Canton, China. Tubers presented by F. A. McClure, instructor, Canton Christian College. Received January 7, 1921.

"This taro, or dasheen, is known locally by the name *tso oo.* The small tubers that grow out from the 'eyes' of the mother tuber are called *oo tsai.*

It is these that I am sending. This variety of taro is common in all parts of Kwangtung and Kwangsi and is the earliest variety known here. Its quality, however, is only medium, compared with that of the later varieties. The taro prefers a loose sandy soil and is sometimes grown along with ginger, bean, or Chinese melons, in various companion-cropping systems. The fertilizers commonly used are ashes from rice straw, horse manure, and night soil. The average yield per mow (one-fifth acre) is about 20 taams, or 2,600 pounds. Of these, about one-half are the large 'mother' tubers [corms] and about one-half are the new small tubers, or *oo tsai*. The large ones are fed to hogs largely, because of their inferior quality and coarseness. They bring an average price of $1.60 local silver (about $1 G.) per 130 pounds. The small ones are used for human consumption, and they bring about $2 local silver per 130 pounds. In selecting for seed, the largest and finest tubers are chosen, those which have a red swollen sprout at the top being preferred. The crop is planted here in February and March, and the harvest is ready by June and July." (*McClure.*)

"Leaf stem deep purplish maroon, shading into green near the blade, and with conspicuous band of bright green at base. Petiolar sinus grayish white with network of purplish veins. Petiolar spot on blade indistinct or absent." (*R. A. Young.*)

52333 and 52334.

From Burringbar, New South Wales, Australia. Seeds presented by B. Harrison. Received January 7, 1921.

52333. ACACIA sp. Mimosaceæ. **Wattle.**

"A creeping wattle, rooting at the joints, which should prove useful as a sand binder. It grows to a height of about 3 or 4 feet on the beach here." (*Harrison.*)

Received as *Acacia procumbens*, for which a place of publication has not been found.

52334. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

"*Harrison's Prolific.* This tomato is a rapid grower and in our district, which is subtropical, grew in 12 months to the height of 11 feet, attained a spread of 16 feet, and produced 100 dozen fair-sized fruits. It commences to bear when only 9 to 12 inches in height and branches profusely both close to the ground and along the stems. The fruit is scarlet, very fine flavored, and about 4 or 5 inches in circumference. The first plant attracted a great deal of attention from residents for miles around, who declared they had never before seen anything approaching it. The soil where the plant grew was well drained and had been lightly burned over, which was probably the cause of the vines thriving so well and escaping any disease." (*Harrison.*)

52335. TRIFOLIUM SUBTERRANEUM L. Fabaceæ.

Subterranean clover.

From Melbourne, Victoria, Australia. Seeds purchased from F. H. Brunning. Received January 10, 1921.

"One of the most nutritious plants known to agriculture, indigenous to Britain and found growing on dry, sandy, and gravelly soil. The stems grow over each other to a depth of 6 or 7 inches, the lower ones being as healthy as those above." (*Brunning.*)

52336 and 52337.

From Cambridge, England. Seeds presented by F. G. Preston, Botanic Garden. Received January 8, 1921.

52336. BERBERIS BREVIPANICULATA C. Schneid. Berberidaceæ. **Barberry.**

A shrub from western China with tawny glabrous young branches, later becoming furrowed and ash colored, and graceful golden yellow spines. The oblong, entire, clustered leaves are 10 to 30 millimeters long, shining above, distinctly glaucous, and with a bloom. The small graceful flowers are in panicles which are sometimes 2.5 centimeters long. (Adapted from *Bulletin de l'Herbier Boissier, ser. 2, vol. 8, p. 263.*)

For previous introduction, see S. P. I. No. 38986.

52337. CLEMATIS TANGUTICA OBTUSIUSCULA Rehd. and Wils. Ranunculaceæ. **Clematis.**

A glaucous-green climbing shrub, native to central Asia, with leaves 3 to 5 inches long, consisting of lanceolate segments up to 2½ inches long, often lobed in one or both sides. The nodding solitary flowers are very large, on erect peduncles that are 6 inches long and arched at the tip. The oval-lanceolate, golden yellow sepals are 2 inches long with recurved tips. (Adapted from *Curtis's Botanical Magazine, pl. 7710.*)

52338. HOLCUS HALEPENSIS × SORGHUM. Poaceæ. **Sorghum.**

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received January 8, 1921.

"A perennial sorghum which appears to be interesting as a forage." (*Trabut.*)

For previous introduction, see S. P. I. No. 39588.

52339 to 52342.

From Paris, France. Seeds presented by M. Auguste Chevalier. Received January 11, 1921. Quoted notes by M. Chevalier.

52339. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"A wild peach growing at an altitude of 1,000 meters in the mountains of Annam, French Indo-China."

52340. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"A form improved under cultivation by the inhabitants of the mountains of Annam, French Indo-China. Grows at altitudes of 1,000 meters."

52341. MALUS LAOSENSIS (Cardot) Cheval. Malaceæ. **Apple.**

"A cider apple from Tranninh, Laos, French Indo-China."

52342. PYRUS PASHIA Buch.-Ham. Malaceæ. **Pear.**

A small tree common in Simla, Burma, North China, and in the temperate Himalayas at altitudes of 3,000 to 8,000 feet. The barren branchlets usually end in a spine. The simple, ovate or ovate-lanceolate, long-pointed leaves, 2 to 4 inches long, are tomentose when young, ultimately glabrous. The white flowers tinged with pink, 1 inch in diameter, are in simple corymbs of 10 or fewer. The yellowish brown apple-shaped fruits, half an inch to an inch in diameter, are rough with small white spots. (Adapted from *Collett, Flora Simlensis, p. 169.*)

For previous introduction, see S. P. I. No. 44052.

52343 to 52349.

From Buitenzorg, Java. Seeds presented by L. Koch, chief, Plant Breeding Station for Annual Crops. Received January 12, 1921. Quoted notes by Mr. Koch.

52343 and 52344. ARACHIS HYPOGAEA L. Fabaceæ. **Peanut.**

52343. "*Katjang Tanoh Toeban*, one of the best types of peanuts. The seed pods are formed close together like those of Spanish peanuts, which ripen here in about 80 days. This variety ripens in about 100 days. When harvested, almost all the seed pods are ripe, so that there is almost no loss from overripe or shriveled seeds." (*Koch.*)

52344. "*Katjang Tanoh Witte Bastaard No. 3.* One of the types obtained by crossbreeding white hybrid No. 3. This variety ripens in about 100 days; the seed pods are formed close together like those of Spanish peanuts and 'small Japan nuts.' When harvested almost all the seed pods are ripe, so that there is almost no loss from overripe or shriveled seeds." (*Koch.*)

52345 to 52349. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

52345. "*Witte Kedelei No. 18*, a variety imported from Formosa, which is late ripening, having a growing period of about 120 days."

52346. "*Zwarte Kedelei No. 15.* Selected Javanese variety which has a growing period of 95 to 100 days."

52345. "*White Kedelei No. 18*, a variety imported from Formosa, with a growing period of 95 to 100 days."

52348. "*Zwarte Kedelei No. 17a.* Imported from Formosa. This variety has a growing period of 95 to 100 days."

52349. "*Zwarte Kedelei No. 27.* Probably a Chinese variety, which has a growing period of 95 to 100 days. *Peking* ripens here in about 75 days."

52350 and 52351. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From Fajardo, Porto Rico. Seeds presented by R. A. Vive, in charge, Experimental Station. Received January 15, 1921.

52350. "*Demerara 433.* A variety known to produce fertile seeds and juice of high density; the most tolerant to mosaic disease of any cane that we have." (*Vive.*)

52351. "*Demerara 109.* A variety known to produce fertile seeds and juices of high density. A very good germinator." (*Vive.*)

52352. DAVIDSONIA PRURIENS F. Muell. Cunoniaceæ.

From Burringbar, New South Wales. Seeds presented by B. Harrison. Received January 18, 1921.

"A palmlike tree with large long-lobed leaves at the top. The pear-shaped purple plums are borne on the trunk and even on the roots of the tree if these are exposed above the surface of the ground. The fruit juice makes a refreshing beverage for summer time and could also be used for coloring liquids, etc." (*Harrison.*)

52353. CASSIA EREMOPHILA A. Cunn. Cæsalpiniaceæ.

From New South Wales, Australia. Seeds presented by Hugh Dixson, Abergeldie. Received January 18, 1921.

"A yellow-flowered shrub, 5 feet high, which remains a long time in flower. The plant is native to the interior of New South Wales, so that it will stand heat and also temperatures as low as 15° F. I have only one plant, but it is so floriferous that I intend having more in the garden." (*Dixson.*)

For previous introduction, see S. P. I. No. 44071.

52354 and 52355. CORYLUS AVELLANA L. Betulaceæ. **Filbert.**

From Loiret, France. Plants presented by M. Edmond Versin. Received January 19, 1921.

52354. "*Précoce de Frauendorf.*" (*Versin.*)

52355. "*Princesse royale.*" (*Versin.*)

52356. TRIFOLIUM GLOMERATUM L. Fabaceæ. **Cluster clover.**

From Adelaide, South Australia. Seeds presented by J. F. Bailey, Director of Agriculture. Received January 19, 1921.

"Although this clover is to be found over considerable stretches of country in this State, there is only one district where it is anything out of the ordinary as a fodder plant, and this is a comparatively small strip of extremely fertile volcanic land between Mount Gambier and Mount Schank. Here, in most seasons, it covers much of the pasture land to the exclusion of most other plants, and after being grazed for some months will make a dense mass 2 to 2½ feet high, which is cut for hay. Other than in this particular strip of country, the clover is useful only because it grows fairly well in sour soils low in phosphate content, when these soils first come into cultivation and before the other clovers have established themselves." (*W. J. Safford, superintendent, Experimental Work, Adelaide.*)

For previous introduction, see S. P. I. No. 9756.

52357. ECHIUM VIOLACEUM L. Boraginaceæ.

From Cordoba, Cordoba Province, Argentina. Seeds presented by Dr. C. C. Hosseus, Academia Nacional de Ciencias, through Prof. C. V. Piper, Agrostologist in Charge, Office of Forage-Crop Investigations. Received January 21, 1921.

"A desirable ornamental, known in Brazil as *flor morado* (purple flower), and reported to be a valuable forage plant. It is native to the Mediterranean region of Europe and Africa and apparently introduced into Brazil, Uruguay, and Argentina. The plant is beautiful when in bloom." (*Piper.*)

52358 to 52361. LINUM spp. Linaceæ. **Flax.**

From Glasnevin, Dublin, Ireland. Seeds presented by F. W. Moore, director, Royal Botanic Garden. Received January 21, 1921.

52358. LINUM ALPINUM L.

A herbaceous plant found in fields on the Alps and Jura Mountains, with slender stems branching at the top and decorated with numerous narrow leaves; the large lilac-blue flowers are in lax clusters at the tips of the branches. It thrives in the sun and is much esteemed for rock gardens; it flowers from June until the winter and requires no care. (Adapted from *Correvon et Robert, Flore Alpine, p. 295.*)

52358 to 52361—Continued.

52359. LINUM GRANDIFLORUM Desf.

Variety *rubrum*.

"An erect, branching plant, 25 inches high, native to Algeria. The bluish green leaves are darker than those of *Linum usitatissimum*, and the plant is also later and less determinate in its blooming period; the flowers are much larger and of a deep-red color." (*J. C. Brinsmade, jr.*)

For previous introduction, see S. P. I. No. 38972.

52360. LINUM MUELLERI Moris.

A plant 1½ feet high, with shrubby branching stem, found in hilly grazing lands in Sardinia. The green glabrous leaves have revolute margins; the lower are elliptic, the upper linear-lanceolate. The yellow flowers are in lax terminal panicles. (Adapted from *Moris, Flora Sardoa, vol. 1, p. 358.*)

52361. LINUM USITATISSIMUM L.

A form introduced for flax investigations.

For previous introduction, see S. P. I. No. 50160.

52362. CRATAEGUS AZAROLUS L. Malaceæ. Hawthorn.

From Cefalu, Sicily, Italy. Seeds presented by Signor Salvatore Scalco, through E. M. Byrnes, assistant in charge, Experimental Gardens and Grounds, United States Department of Agriculture, Washington, D. C. Received January 24, 1921.

Among the species of Crataegus one of the most important is *C. azarolus*, with its numerous varieties and races. This is a shrub of the calcareous hills and grows only on very dry lands. If undisturbed, it grows as high as 13 to 16 feet, but its branches are generally hacked off for fuel by Arab women or mutilated by heavy stones thrown by the boys to shake down the fruit. Some varieties of *C. azarolus* have fruits as large as a large cherry, with a very agreeable acid taste. Although they are sold on the markets of the Orient, they would not be marketable in Europe or America because of the large stones; but specimens are often found which are nearly stoneless, and it is possible that this character could be fixed by selection. For 15 years or more the writer has used *C. azarolus* as a stock for pears with excellent results. Top grafted at 2 to 3 feet above the ground, it develops into a very beautiful, productive, and long-lived dwarf tree, provided the grafting is done with a very early variety. This shrub occurs in extremely hot, dry places, and must therefore complete the greater part of its development early in the season. Its roots therefore are unable to furnish the amount of sap necessary to develop pears in August. If, however, it is grafted with a pear which fruits in May or June, when the roots of the Crataegus are in their period of greatest activity, the best results are obtained. The writer speaks only of pears because he has experimented with them, but he sees no reason a priori why these stocks should not do as well for apples, which he has not as yet tried. (Adapted from *Aaronsohn, Agricultural and Botanical Explorations in Palestine, Bureau of Plant Industry Bulletin No. 180, pp. 15–16.*)

For previous introduction, see S. P. I. Nos. 48516 and 48517.

52363. DOLICHOS LABLAB L. Fabaceæ. **Bonavist bean.**

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received February 4, 1921.

Lablab stringless. A tall twining plant, often reaching a height of 15 feet, with bunches of short, broad, yellowish white pods. The very numerous slightly downy pods contain brown seeds, half an inch broad and one-third of an inch thick, provided with a curious white aril or keel along one of the edges. (Adapted from *Vilmorin-Andrieux & Co., General Wholesale Seed List, 1920, p. 28.*)

52364 to 52366. LINUM spp. Linaceæ. **Flax.**

From Amsterdam, Netherlands. Seeds presented by the director, Jardin Botanique de l'Université d'Amsterdam. Received January 25, 1921.

52364. LINUM MONOGYNUM Forst. f.

1920 harvest.

A very desirable species native to New Zealand, which blossoms in the greenhouse in May and June and has a succession of large white flowers for a great length of time. The plant is 1½ feet high, with erect glaucous stems much branched at the top in a corymbose manner. The sepal margins are white and diaphanous; the handsome petals are broadly ovate-obtuse. (Adapted from *Curtis's Botanical Magazine, pl. 3574.*)

52365 and 52366. LINUM USITATISSIMUM L.

52365. A form introduced for experimental purposes; harvested in 1919.

For previous introduction, see S. P. I. No. 52361.

52366. Introduced for experimental purposes; from the 1920 crop.

For previous introduction, see S. P. I. No. 52361.

52367. KENNEDIA RUBICUNDA (Schneev.) Vent. Fabaceæ.

From San Francisco, Calif. Seeds presented by Miss Alice Eastwood. Received January 25, 1921.

A tender, hairy twiner, native to Trinidad. The dark-purple flowers, with oblong, revolute standard and linear-oblong wings and keel, are borne in silky racemes shorter than the three-parted leaves. (Adapted from *Edwards's Botanical Register, pl. 1101.*)

For previous introduction, see S. P. I. No. 49487.

52368. POPULUS EUPHRATICA Oliver. Salicaceæ. **Poplar.**

From Algiers, Algeria. Cuttings presented by Dr. L. Trabut. Received January 26, 1921.

This Algerian tree attains a height of 50 feet. The wood is harder than that of most other poplars. It is used for planking and boat building, also for beams, rafters, boxes, paneling, and turnery. On account of its lightness the wood is frequently used for rafts. Cattle browse on the leaves. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 417.*)

For previous introduction, see S. P. I. No. 30054.

52369 to 52374. LINUM spp. Linaceæ. **Flax.**

From Edinburgh, Scotland. Seeds presented by Dr. Isaac Bayley Balfour, director, Royal Botanic Garden. Received January 26, 1921. Quoted notes by J. C. Brinsmade, jr., Office of Cereal Investigations, Bureau of Plant Industry.

52369 to 52374—Continued.

52369. LINUM FLAVUM L.

"A perennial branching plant native to Europe, 5 to 10 inches high, with large yellow flowers."

52370. LINUM GRANDIFLORUM Desf.

Variety *rubrum*. Introduced for flax investigations.

For previous introductions, see S. P. I. No. 52359.

52371. LINUM MONOGYNUM Forst. f.

A form introduced for experimental purposes.

For previous introduction, see S. P. I. No. 52364.

52372. LINUM PERENNE L.

Variety *sibiricum*.

"An erect, branching compact plant, 6 to 12 inches high, with blue-green leaves and purple flowers. Native to Europe."

This species is much esteemed for rock gardens. It flourishes in the sun and flowers from June until the winter without requiring any care. (Adapted from *Correvon et Robert, Flore Alpine, p. 295.*)

52373. LINUM TENUIFOLIUM L.

This plant differs from *Linum alpinum* in its shorter, more slender stems, its longer, narrower leaves rough at the edges, and in its rose-lilac fugacious corolla. It grows on the warm sunny slopes of the lower regions of the Alps and Jura Mountains. It is cultivated for rock gardens, requires no care, and flowers from June to winter. (Adapted from *Correvon et Robert, Flore Alpine, p. 295.*)

52374. LINUM USITATISSIMUM L.

Introduced for the Office of Cereal Investigations.

For previous introduction, see S. P. I. No. 52365.

52375 and 52376.

From Cambridge, England. Seeds presented by J. Burtt Davy. Received February 2, 1921.

52375. ANNONA CHERIMOLA Mill. Annonaceæ. **Cherimoya.**

"Seeds of a custard-apple from Madeira; I do not know that it is better than any others, but it might be of use to anyone working on this fruit." (*Davy.*)

52376. VIRGILIA CAPENSIS (L.) Lam. Fabaceæ.

"A very ornamental strain of the *keurboom* from South Africa, which may prove useful in Hawaii and ornamental in Florida and southern California as a flowering tree." (*Davy.*)

For previous introduction, see S. P. I. No. 48188.

52377. DIOSPYROS EBENASTER Retz. Diospyraceæ. **Black sapote.**

From Honolulu, Hawaii, Seeds presented by Gerrit P. Wilder. Received February 4, 1921.

One of the most popular fruits of Mexico, where it is grown at altitudes up to 6,000 feet. In favorable situations the tree reaches a height of 60 feet. The bright-green, shining elliptic leaves are 4 to 8 inches long. The oblate, olive-green thin-skinned fruit is 2 to 5 inches in diameter. The soft, unctuous, dark chocolate-brown pulp is of sweet flavor somewhat similar to that of the kaki, but

scarcely so pleasant. This fruit is eaten fresh but is more highly esteemed by Europeans when the pulp is beaten with a small quantity of orange or lemon juice and served as a dessert. It should be chilled thoroughly before being served. (Adapted from *Popenoe, Manual of Tropical and Subtropical Fruits, p. 370.*)

For previous introduction, see S. P. I. No. 49480.

52378. JUNIPERUS THURIFERA L. Pinaceæ. **Juniper.**

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received February 4, 1921.

"Found at Awies, at an altitude of 1,800 meters." (*Trabut.*)

A tree 5 to 10 meters high, with a thick trunk and a rounded or flattened crown. The light-brown or bluish pruinose fruits are erect or horizontal. Native to Spain. (Adapted from *Lázaro, Compendio de la Flora Española, vol. 1, p. 594.*)

52379. STACHYS SIEBOLDI Miquel. Menthaceæ.

From Paris, France. Tubers purchased from Vilmorin-Andrieux & Co. Received February 5, 1921.

A perennial, growing 10 to 18 inches tall, with creeping rootstocks. It is cultivated for its 2 to 3 inch slender nodose white tubers. These tubers soon shrivel when exposed to the air and should be lifted only when wanted. They are eaten cooked in different ways or as a salad. (Adapted from *Vilmorin-Andrieux & Co., General Wholesale Seed List, p. 53.*)

For previous introduction, see S. P. I. No. 50541.

52380 to 52382. LINUM spp. Linaceæ. **Flax.**

From Stockholm, Sweden. Seeds presented by Dr. Robert E. Fries, director, Hortus Botanicus Bergianus. Received February 8, 1921.

52380. LINUM AUSTRIACUM L.

A perennial herb found in Vizcaya and Catalonia, Spain, with an almost woody root, linear-lanceolate leaves, and nearly corymbose racemes. The violet-red or light-blue petals are ovate-rounded. (Adapted from *Lázaro, Compendio de la Flora Española, vol. 2, p. 296.*)

52381. LINUM FLAVUM L.

This form was introduced for experimental purposes.

For previous introduction, see S. P. I. No. 52369.

52382. LINUM USITATISSIMUM L.

Introduced for experimental purposes.

For previous introduction, see S. P. I. No. 52374.

52383. MISCANTHUS CONDENSATUS Hack. Poaceæ. **Plume-grass.**

From Yokohama, Japan. Seeds presented by S. Iida, manager, Yokohama Nursery Co. Received February 9, 1921.

"A grass native to Hachijo Island (also at the latitude of Tokyo) of an evergreen and tender nature, and with a wider blade and thicker stalk than is found in our common Miscanthus. It is extensively cultivated as fodder; cattle like it better than cornstalks. The excellent quality of the milk products of the island is said to be due to this grass." (*Iida.*)

52384 to 52386.

From Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received January 20, 1921.

52384. GOSSYPIUM ARBOREUM L. Malvaceæ. **Tree cotton.**

"At Wat Lum, Siam, along the Menam River, I found an interesting cotton plant 10 to 12 feet high, worthy of cultivation on account of its beautiful red flowers. There were very few seeds, but I am sending some." (*Rock.*)

For previous introduction, see S. P. I. No. 34184.

52385. SOLANUM MAMMOSUM L. Solanaceæ.

"From Champorn, Lower Siam. An ornamental plant with peculiar fruits having fingerlike protuberances at the stem end." (*Rock.*)

For previous introduction, see S. P. I. No. 48145.

52386. THESPESIA LAMPS (Cav.) Dalz. and Gibs.

"An ornamental shrub 5 to 8 feet in height, with large yellow flowers. It is common in the forests of northern Siam." (*Rock.*)

A small bush common in the tropical jungles of India, Burma, and Ceylon, from Kumaon eastward, ascending to 3,000 feet in Nepal. The young twigs yield a good fiber. The root and fruit are used medicinally. The tough pliant wood is much used in certain parts of Bombay Province for making drums. (Adapted from *Watt, Dictionary of the Economic Plants of India, vol. 6, pt. 4, p. 45.*)

For previous introduction, see S. P. I. No. 26166.

52387 to 52391.

From Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received January 20, 1921. Quoted notes by Mr. Rock.

52387. CASTANEA DIVERSIFOLIA Kurz. Fagaceæ.

"(No. 81. From Bangkok, Siam.) Mighty trees with wonderful crowns, straight trunks, and fine wood. The nuts are quite sweet and very tasty when roasted. The trees are prolific bearers, and seeds are plentiful just now."

52388 and 52389. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Pummelo.**

(*C. decumana* Murr.)

52388. "(From Nakon Chaisri, Siam.) *Nakon Chaisri* pummelo, grown in Nakon Chaisri, and presented by Dr. Yai, Minister of Agriculture, who has a garden up the Menam River 8 miles from Bangkok. There are three distinct seasonal crops, and I was told that the crop borne during the rainy season usually produced seeds, while in the other seasons the fruits are seedless. Dr. W. A. Graham, agricultural adviser, says that the formation of seeds is due to pollination by a fly, which is apparently absent at other seasons.

"Doctor Yai, who is an expert on pummelos, etc., says that when plants of this pummelo are brought to and planted in Bangkok, they change their character entirely and become quite a different thing; that the trees, in fact, bear fruits identical with a pummelo long cultivated in Bangkok and known as *Ban Kun Non.* Doctor Yai thinks that the *Nakon Chaisri* pummelo originated from this

52387 to 52391—Continued.

Ban Kun Non and that when brought to Bangkok from Nakon Chaisri, only an hour or so distant by rail, it reverts to the *Ban Kun Non.* The *Nakon Chaisri* pummelo can not be shipped for various reasons; the main one is that it loses its aroma.

"The citrus fruits differ considerably here; for example, all citrus fruits grown south of Bangkok and also nearer the sea are far superior to those north of Bangkok. A matter of 8 miles or so makes a great difference. Those grown south of Bangkok are irrigated or inundated by very salty water, as the tide carries the salty ocean water up the Menam River and into the Klongs. When planting the *Nakon Chaisri* pummelo elsewhere the natives always add salt to the soil.

"North of Bangkok the river water is quite sweet. I tasted mandarins, choice fruits grown south of Bangkok, and fruits from stock which was derived from the southern garden but grown north of Bangkok, and the difference was tremendous. Those grown south of Bangkok sell for 6 ticals per hundred, and those grown north of Bangkok, although larger, sell for 3 ticals per hundred because the aroma is not comparable."

52389. "(From Bangkok, Siam.) *Thong Dee* pummelo. Seed presented by Doctor Yai, Minister of Agriculture. Doctor Yai considers this the best pummelo of Siam; it is a little acid and so is better liked than the *Nakon Chaisri,* which is very sweet; it is a splendid shipper and has quite the aroma of the *Nakon Chaisri.* The *Thong Dee* pummelo does not lose its flavor when planted elsewhere; it produces seeds and is also seedless at times."

52390. PTEROCARPUS MACROCARPUS Kurz. Fabaceæ.

"From Korat, Siam. The *mai padou,* one of the finest timber trees of Morat. It grows to a height of 150 feet with a girth of 10 feet at 4 feet above the ground. All the wood, or nearly all, is bought by Japan; it is very hard and splendidly adapted for furniture and also for construction work."

52391. QUERCUS TRUNCATA King. Fagaceæ. **Oak.**

"(No. 75. From Bangkok, Siam.) A valuable oak which grows on dry, shady, or gravelly slopes, at an altitude of 2,400 to 5,000 feet, and I should think that it would thrive in California and also in Florida. The acorns are very sweet and are eaten roasted. I have eaten many of them myself and they are rather good. The tree is a prolific bearer and seeds are plentiful just now."

52392. MALUS SYLVESTRIS Mill. Malaceæ. **Apple.**
(*Pyrus malus* L.)

From Kona, Hawaii. Scions presented by J. E. Gamalielson, weather observer, through Prof. W. H. Sherzer, Michigan State Normal College, Ypsilanti, Mich. Received March 29, 1921.

"A sport found by Mr. Gamalielson, about 15 years ago, growing on a fallen tree-fern log. He recognized the growing sprouts as being those of the apple, and he brought one to his home. It grew there for some time and bore fruit. From the original tree he transferred a sprout to his present home, and it has

been bearing ever since, some years so prolifically that the branches had to be propped to keep them from breaking off. The apple produced is a moderately good one and entirely without seeds. Apples do not grow very favorably in that climate. The elevation at Kona, Hawaii, is 500 feet; the precipitation about 127 inches, temperature averaging approximately 70° F." (*William A. Taylor.*)

52393 to 52397. QUERCUS spp. Fagaceæ. Oak.

From Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received January 20, 1921. Quoted notes by Mr. Rock.

"From Bangkok, Siam. Valuable oaks which grow on dry, shady, or gravelly slopes, at altitudes of 2,400 to 5,000 feet, and I should think that they would thrive in California and also in Florida. The acorns are very sweet and are eaten roasted. I have eaten many of them myself, and they are rather good. The trees are prolific bearers, and seeds are plentiful just now."

52393 and 52394. QUERCUS LINDLEYANA Wall.

52393. "No. 77a." **52394.** "No. 77b."

52395. QUERCUS POLYSTACHYA Wall.
"No. 78."

52396. QUERCUS SOOTEPENSIS Craib.
"No. 82."

52397. QUERCUS THOMSONI Miquel.
"No. 89."

52398. EUPHORBIA sp. Euphorbiaceæ.

From Meping River bluff, Fa Man, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received February 1, 1921.

"*Mai khai.* A valuable shrub for use for binding sand on steep banks. It is exceedingly strong." (*Rock.*)

52399 to 52421.

From Honolulu, Hawaii. Seeds presented by Dr. Harold L. Lyon, in charge, department of botany and forestry, experiment station of the Hawaiian Sugar Planters' Association. Received January 31, 1921. Quoted notes by Dr. Lyon.

52399. CANARIUM RUFUM A. W. Benn. Balsameaceæ.

"Forwarded by the director of the Botanic Garden, Singapore."

A medium-sized tree with oblong coriaceous pinnæ 1 to 2 feet long. The flowers are fascicled on a terminal panicle. The drupes are 2 inches long. Native to Malakka. (Adapted from *Hooker, Flora of British India, vol. 1, p. 533.*)

52400. CANAVALI OBTUSIFOLIUM (Lam.) DC. Fabaceæ.

"Collected in Fiji by C. E. Pemberton."

A glabrous perennial creeper, widely distributed as a strand plant on tropical shores, with pinnately trifoliate leaves and few-seeded pods. According to Maiden, the brown oblong seeds are cooked and eaten by the Australian natives. The plant is useful as a binder of loose sand. (Adapted from *Contributions from the United States National Herbarium, vol. 9, p. 211.*)

For previous introduction, see S. P. I. No. 48600.

52399 to 52421—Continued.

52401. CASSIA GRANDIS L. f. Cæsalpiniaceæ.

"Forwarded by director of the Botanic Garden, Singapore."

A tree of medium size, native to the West Indies and Guiana, with a fairly stout stem; it branches irregularly and has a moderate spread. The large pinnate leaves are dark green. The pretty pink flowers are borne on innumerable short racemes along the bare branches, never or rarely among the foliage. The large, rough, hardwood pods, 16 to 18 inches long and 1¼ inches wide, almost round, are borne in great numbers; the numerous brown flattish, oblong seeds, rather small for the size of the pod, are each in a separate compartment wrapped in a thick gluelike substance. The beans are nondehiscent. Creoles are very fond of eating the substance in which the seeds are inclosed, although it has a very pungent odor. (Adapted from *Journal of the Board of Agriculture of British Guiana, vol. 12, p. 4.*)

For previous introduction, see S. P. I. No. 46140.

52402. CYCAS sp. Cycadaceæ.

"A cycad which grows here in dense groves; it is from 5 to 25 feet in height and resembles *Cycas revoluta.*"

52403. ELAEOCARPUS sp. Elæocarpaceæ.

"A fine tree with large glossy leaves."

52404 to 52410. FICUS spp. Moraceæ. **Fig.**

52404. FICUS sp.

"Collected in Fiji by C. E. Pemberton."

"A tree 20 to 40 feet tall." (*Pemberton.*)

52405. FICUS sp.

"Collected near Cairns, North Queensland, by J. A. Kusche."

"The only fig tree seen here, found growing in a salt-water slough near Cairns. The tree is about 100 feet tall, with no aerial roots, with compact dense foliage, and with a spread of about 100 to 150 feet. The dark-red fruit is the size of a walnut." (*Kusche.*)

52406. FICUS sp.

"Collected near Cairns, North Queensland, by J. A. Kusche."

"A large clean tree with fruit of a fine delicately sweet flavor and the size of a black Smyrna fig, only more rounded and dark crimson when ripe." (*Kusche.*)

52407. FICUS sp.

"Collected on Prince of Wales Island by J. A. Kusche."

"A large spreading tree." (*Kusche.*)

52408. FICUS sp.

"Collected on Prince of Wales Island by J. A. Kusche."

"One of the largest figs on the island; the fruit is orange-yellow." (*Kusche.*)

52409. FICUS sp.

"Collected on Prince of Wales Island by J. A. Kusche."

"Small-leaved fig; a large spreading tree." (*Kusche.*)

52410. FICUS sp.

"Collected on Prince of Wales Island by J. A. Kusche."

"A very large tree, white fruited." (*Kusche.*)

52399 to 52421—Continued.

52411. FLACOURTIA INDICA (Burm. f.) Merr. Flacourtiaceæ.
(*F. ramontchi* L'Hérit.) Ramontchi.

"Collected in Fiji by C. E. Pemberton."

"An introduced tree 30 feet tall, called 'Indian cherry,' a good ornamental with rich dark foliage." (*Pemberton.*)

For previous introduction, see S. P. I. No. 28289.

52412. MAXIMILIANEA VITIFOLIA (Willd.) Krug and Urb. Cochlospermaceæ.
(*Cochlospermum hibiscoides* Kunth.)

"Collected on Prince of Wales Island by J. A. Kusche."

"A tree from 10 to 50 feet tall with leaves like those of the maple; very showy when in bloom, with clusters of deep-yellow flowers the size of a dollar." (*Kusche.*)

52413. MIMUSOPS sp. Sapotaceæ.

"Collected on Prince of Wales Island by J. A. Kusche."

"Native plum. The fruit is eaten by the natives." (*Kusche.*)

52414. MUCUNA sp. Fabaceæ.

"Collected in Fiji by C. E. Pemberton."

52415. PARINARI sp. Rosaceæ.

"Collected on Prince of Wales Island by J. A. Kusche."

"One of the finest and largest trees on the island, 25 to 150 feet high, with very hard wood, and a spread of 150 to 200 feet. It grows everywhere on seashore and mountains. The tree is clean; no insects were noted." (*Kusche.*)

52416. STERCULIA sp. Sterculiaceæ.

"Collected on Prince of Wales Island by J. A. Kusche."

52417. ZIZIPHUS MAURITIANA Lam. Rhamnaceæ. Bor.

"Collected in Fiji by C. E. Pemberton."

"A small tree 15 feet in height, with an edible, apple-flavored yellowish green fruit 1 inch in diameter. Said to be from India." (*Pemberton.*)

For previous introduction, see S. P. I. No. 45625.

52418. (Undetermined.)

"Collected in Fiji by C. E. Pemberton."

"A tree 30 feet tall, native forest 'Lami.'" (*Pemberton.*)

52419. (Undetermined.)

"Collected in Fiji by C. E. Pemberton."

"A shrub." (*Pemberton.*)

52420. (Undetermined.)

"Collected on Prince of Wales Island by J. A. Kusche."

"A nice spreading small tree in the jungle, with long, dark, glossy leaves and hard wood." (*Kusche.*)

52421. (Undetermined.)

"Collected on Prince of Wales Island by J. A. Kusche."

"A small tree growing near the beach." (*Kusche.*)

52422 to 52424. Datura metel L. Solanaceæ. Datura.

From Goa, Portuguese India. Seeds presented by P. Correia Affonso. Received January 21, 1921.

52422. "A plant which has been used for centuries by the Hindus, Persians, Arabs, and other oriental peoples as a narcotic. In India, Datura doctors dispensed these seeds which are often used by thugs and other criminals to render their victims unconscious, dispensing it clandestinely with food or drink. Goa may be regarded as the type locality of this species. At least three different forms occur, chiefly distinguished from one another by the color of the stems and flowers, and also by the presence or absence of prickles on the capsules. All normal forms are characterized by 5-toothed trumpet-shaped corollas and globose, tuberculate, or spiny capsules which differ from those of our common *Datura stramonium* in being borne on inclined or nodding, instead of erect, peduncles and in not being regularly dehiscent." (*W. E. Safford.*)

For previous introduction, see S. P. I. No. 43774.

52423. This may possibly be a different color from S. P. I. No. 52422.

52424. Possibly a different form from the foregoing.

52425 and 52426. Holcus sorghum L. Poaceæ. Sorghum.

(*Sorghum vulgare* Pers.)

From Johannesburg, Transvaal. Seeds presented by the Agricultural Supply Association. Numbered January, 1921. Quoted notes by H. N. Vinall.

"The results of tests at Chillicothe, Tex., in 1921, indicated that these two lots were not equal either in yield or quality to the regular strains of Blackhull kafir. As forage they would be classed as medium, and the seed yield was about average. The plants grew to a height of 5½ feet, a little taller than our ordinary Blackhull kafir."

52425. "The plants of this lot had 13 leaves, being therefore slightly better than the No. 52426 for forage."

52426. "The plants of this lot had 11 leaves."

52427 to 52431. Saccharum officinarum L. Poaceæ. Sugar cane.

From Florida. Seeds presented through Dr. E. W. Brandes, Pathologist, Office of Sugar-Plant Investigations, United States Department of Agriculture, Washington, D. C. Received January 29, 1921.

52427. *Christal*, from J. W. Ives, Kreamer Island, Fla. For experimental purposes.

52428. *D–74*, from J. A. McGee, Ritta Island, Fla. For experimental purposes.

"A sugar cane of medium size, early maturing, imported from Demerara by the Louisiana Sugar-Experiment Station, and now one of the most popular varieties in Louisiana for sugar manufacture." (*P. A. Yoder.*)

52429. *D–74*, from A. H. Price, South Bay, Fla. For experimental purposes.

52430. *D–74*, from H. A. Braddock, Tory Island, Fla. For experimental purposes.

52427 to 52431—Continued.

52431. *Florida Green*, from W. B. Cross, Kreamer Island, Fla. Introduced for experimental purposes.

"Presumably a medium-sized soft green cane identical with *Otaheite* of Cuba and *Bourbon* of the British West Indies. Variety low in fiber and highly susceptible to most sugar-cane diseases. Liked for a chewing cane but not well adapted for sirup or sugar because of the lack of disease resistance and poor ratooning qualities." (*P. A. Yoder.*)

52432 to 52435. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From Rio Piedras, Porto Rico. Seeds presented by F. S. Earle, Insular Experiment Station. Received January 15, 1921.

52432. "*D–109.* A dark-red cane, originated in Demerara by Doctor Harrison, fairly resistant to root disease and a fairly good ratooner. Its dark color might make it undesirable for sirup-making. When allowed sufficient time to mature, the cane tests well for sucrose and purity." (*H. B. Cowgill.*)

"A very good germinator." (*R. A. Vive.*)

52433. "*Kavangire* (Uba). A slender fibrous variety of the northern India (Japanese) type, very prolific and resistant to most diseases. Immune to mosaic disease. Similar to or identical with *Uba.*" (*P. A. Yoder.*)

52434. "*P. R. 260.* An erect-growing, green to yellowish green cane, having long stalks of good girth, which gave excellent tonnage in *gran cultura* (long period of growth—18 months in Porto Rico) and also made an exceptionally fine appearance at Central Guanica, where it was sent for trial. The tonnage obtained from *gran cultura* was excellent. It has ratooned only fairly well and will probably be more suitable for the south coast, where ratooning is little practiced." (*H. B. Cowgill.*)

52435. "*P. R. 292.* A tall erect-growing cane, of reddish green color, which gave an excellent yield as *gran cultura*, and a juice of good sucrose and purity. The stalks were long and of good girth. It stooled well and was vigorous and healthy. It also made a good growth as ratoon cane." (*Annual Report of the Porto Rico Insular Experiment Station, 1917–1918, p. 91.*)

52436 to 52448.

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received January 14, 1921. Quoted notes by Mr. Rock.

52436. CASTANEA DIVERSIFOLIA Kurz. Fagaceæ.

"(No. 81. Chiengmai, Siam.)"

A moderate-sized evergreen tree found in Nepal, eastern Bengal, Assam, and Chittagong up to an altitude of 5,000 feet. The fruit is eaten and much resembles the filbert in shape and flavor but has a thinner shell. The gray hardwood splits well and is largely used for shingles in Darjiling. It coppices freely and is often pollarded and the branches burned for fertilizer. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 2, p. 228.*)

52436 to 52448—Continued.

52437. ELAEOCARPUS SIAMENSIS Craib. Elæocarpaceæ.

"(No. 80. Chiengmai, Siam.) A fine ornamental foliage tree, producing seeds in great abundance. The seeds are used as a narcotic by the Lao. The tree will grow well in Florida."

A tree about 9 meters high, with densely puberulent young branches and reddish bark. The lanceolate papery leaves are 7 to 14 centimeters long and 2.6 to 6 centimeters wide. The white flowers are in racemes and have the petals, 5 millimeters long and 4 millimeters wide, fringed almost to the middle. The tree is found in an evergreen jungle on Dai Sutep at Chiengmai at an altitude of 660 meters. Lao name, *Mai Moon.* (Adapted from *Kew Bulletin of Miscellaneous Information, 1911, p. 23.*)

52438. GOSSYPIUM sp. Malvaceæ. **Cotton.**

"A cotton with a large lint of khaki color. It grows four days' journey from Chiengmai. This cotton grows wild in the mountains and is now being cultivated in some villages owing to the demand for khaki cotton cloth. It is woven in a village called Lampoon. Many a soldier's uniform is made from this cotton. I have seen Siamese or Lao officials in brown-cotton uniforms."

52439. ORYZA SATIVA L. Poaceæ. **Rice.**

"(No. 94. Chiengmai, Siam.) Black rice, much liked as a breakfast food by the Europeans in Chiengmai. When boiled it is deep purple and has a very fine nutty flavor, quite unlike that of the ordinary rice. It is cultivated exactly like the other rice. The leaves, stalks, etc., are all black, and a field of black rice stands out plainly among the ordinary rice fields. I think that it can be developed as a breakfast food in the States."

52440 to 52448. QUERCUS spp. Fagaceæ. **Oak.**

52440 and 52441. QUERCUS JUNGHUHNII Miquel.

52440. "(No. 88. Chiengmai, Siam.) An oak with edible acorns greatly liked by the Lao people."

52441. "(No. 90. Chiengmai, Siam.) A variety of No. 88 [S. P. I. No. 52440]."

52442. QUERCUS sp.

"(No. 77. Chiengmai, Siam.)"

52443. QUERCUS POLYSTACHYA Wall.

"(No. 78. Chiengmai, Siam.)"

52444. QUERCUS FENESTRATA Roxb.

"(No. 79. Chiengmai, Siam.)"

52445 and 52446. QUERCUS THOMSONI Miquel.

52445. "(No. 86. Chiengmai, Siam.)"

52446. "(No. 89. Chiengmai, Siam.)"

52447. QUERCUS KERRII Craib.

"(No. 91. Chiengmai, Siam.)"

52448. QUERCUS sp.

"(No. 92. Chiengmai, Siam.)"

52449. ALEURITES MOLUCCANA (L.) Willd. Euphorbiaceæ.
(*A. triloba* Forst.) **Lumbang.**

From Mayaguez, Porto Rico. Seeds presented by D. W. May, in charge, Agricultural Experiment Station. Received February 10, 1921.

"Individuals here eat these nuts to some extent, but occasionally they are made quite ill from them, owing to the stage of ripeness of the nut or to some peculiar characteristic of the person that eats them. If they are eaten unripe, they act as a strong purgative; if fully mature and roasted, they are doubtless, in most cases, harmless. From the general experience in Porto Rico, however, I would advise eating them, if at all, with caution." (*May.*)

"Lumbang, or candlenut, oil is used in soap making, and in the Philippine Islands the press cake is highly prized as a fertilizer." (*R. A. Young.*)

52450. TELFAIRIA PEDATA (J. E. Smith) Hook. Cucurbitaceæ.

From Nairobi, Kenia, British East Africa. Seeds presented by S. W. Eells, American consul, through Dr. H. L. Shantz, Physiologist in Charge of Plant Physiological and Fermentation Investigations, Bureau of Plant Industry. Received January 13, 1921.

"A perennial climber, indigenous to eastern Africa, Zanzibar, and Pemba, which grows very luxuriantly and prolifically in this colony. The kernels of the seeds are used by the natives, both as a foodstuff and as a source of edible oil.

"The following analysis showing the percentage of the constituents of the seeds has been published by Gilbert (see Sadebeck, Die Kulturgewächse der Deutschen Kolonien und Ihre Erzeugnisse, Jena, 1899, p. 245): Moisture, 6.45; ash, 2.04; oil, 36.02; protein, 19.63; woody fiber, 7.30; nitrogen-free extractive matter, 28.45.

"These seeds are flat, irregularly circular in shape, and about 1¼ to 1½ inches in diameter. The single seeds average 4.9 grams in weight.

"The Imperial Institute reported as follows:

"'The seeds consist approximately of fibrous husk 11 per cent, shell 38 per cent, and kernel 51 per cent.'

"A previous investigator has recorded 7, 33, and 60 per cent of fibrous husk, shell, and kernel, respectively. The kernel yields 56.9 per cent of slightly reddish brown oil.

"The oil from seeds from Zanzibar gave the following analysis: Specific gravity at 15° C., 0.919; acid value, 2.6; saponification, 196; iodin value, 89.

"This is a nondrying oil and has a pleasant, slightly sweet taste. It would be suitable for soap manufacture, and also as an edible oil. The seed is used by Europeans in this colony both as a nut and as a flavoring for cakes.

"The reason that these seeds are not more used is due to the hardness of the shell and the difficulty of removing it, as well as to the intensely bitter, green skin which separates the kernel from the shell. If a method could be found of removing the tough fibrous husks and this bitter skin, it would appear that the seed would be of considerable commercial value, both for its edible oil and for the manufacture of soap, as well as for the resultant oil cake which would probably make a good cattle feed. It would be impossible, however, to use the cake after pressing the unhusked seeds on account of the skin mentioned above.

"A German syndicate of soap and candle manufacturers at Mannheim has investigated the possibilities of these seeds, but express the opinion that it would be inadvisable to place consignments of the seeds on the European market until a machine had been invented for rapidly and cheaply shelling them.

"These seeds grow very rapidly in any place which is not touched by frost. The pod containing the seeds is about a foot in diameter when ripe. The vine climbs over neighboring trees and requires no care." (*Eells.*)

52451 to 52460.

From Paris, France. Seeds presented by Vilmorin-Andrieux & Co. Received February 21, 1921.

52451 and 52452. CARAGANA spp. Fabaceæ.

52451. CARAGANA ARBORESCENS Lam. **Siberian pea tree.**

Variety *sophoraefolia.* A form of *Caragana arborescens* with extremely small leaflets. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 95.*)

52452. CARAGANA BOISI C. Schneid.

A vigorous species distinguished by its strong spines, the stipules lignified from the base of the rachis, and by its beautiful thick glabrous foliage which is notably persistent. (Adapted from *Vilmorin and Bois, Fruticetum Vilmorianum, Catalogue 1, p. 57.*)

52453 and 52454. BERBERIS spp. Berberidaceæ. **Barberry.**

52453. BERBERIS BRACHYPODA Maxim.

A bush from western China 4 to 7 feet high, with 3-parted spines, oval serrate leaves, yellow flowers in long slender panicles, and scarlet fruits which are up to half an inch in diameter. In its native country this barberry grows at altitudes of 5,200 to 11,700 feet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 375,* and *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 922.*)

For previous introduction, see S. P. I. No. 43818.

52454. BERBERIS AGGREGATA C. Schneid.

A shrub from thickets in the Min Valley, western Szechwan, at altitudes of 4,265 to 7,546 feet. It reaches a height of 5 feet and has yellowish brown spines in clusters of three. The oval-oblong leaves are rather small, with a few distant serrations. The yellow flowers, about one-fourth of an inch wide and almost sessile, are in dense racemes; the fruits are salmon red. (Adapted from *Bulletin l'Herbier Boissier, 2d ser., vol. 8, p. 203,* and from *Sargent, Plantae Wilsonianae, vol. 1, p. 375.*)

For previous introduction, see S. P. I. No. 43817.

52455. DEUTZIA sp. Hydrangeaceæ.

Apparently a new species of Deutzia.

52456 and 52457. PHILADELPHUS spp. Hydrangeaceæ.

52456. PHILADELPHUS GRANDIFLORUS Willd. **Common mock orange.**

A scentless species (though not entirely inodorous) far superior in its display of flowers to any of the fragrant sorts. It makes strong growth up to 10 feet or more in height. When pruned after flowering it makes straight, long shoots of 5 feet or more, which are covered with lovely white flowers along their whole length in the flowering season. The long branches are of great beauty and are in demand for cut-flower decorating, as well as for lawn display. This is a southern species, growing from Virginia southward, but it is quite hardy in the Middle States, and its merit as a hand-

52451 to 52460—Continued.

some, tall-growing shrub causes it to be extensively used for shrubbery plantings. (Adapted from *The Florists' Exchange, vol. 38, p. 15.*)

52457. PHILADELPHUS SERICANTHUS Kuehne. **Chinese mock orange.**

A bush 3 meters high, with inflorescences of 7 to 11 white flowers, native to thickets at altitudes of 1,300 meters in western Szechwan. The bark of 2-year-old twigs is nut brown or gray. The leaf blades are narrowly lanceolate, long-attenuate, with 3 to 8 or more small teeth or occasionally entire, smooth on both sides or with appressed hairs, or the underside densely white hairy on the veins. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 145*, and from *Gartenflora, vol. 45, p. 561.*)

52458. ROSA BEGGERIANA Schrenk. Rosaceæ. **Rose.**

A bush 1 to 2½ meters tall with evenly prickly, pinnate leaves, the leaflets usually 7 to 9, elliptic to oblong, smooth and deep green above, generally thickly hairy and bluish green below. The inflorescences are 1 to nearly 50 flowered and the flowers white, cream, or more rarely red. The fruits are very dark red. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 572.*)

52459. SPIRAEA MYRTILLOIDES Rehder. Rosaceæ. **Spirea.**

A graceful shrub 2 to 3 meters high and excessively spreading. The young branches are chestnut or fuscous brown and glabrous. The numerous short spurs, densely covered with the persistent fulvously pubescent bud scales and bases of the petioles, give to the 2 and 3 year old branches a peculiar appearance. The somewhat papery oval leaves are entire, cuneate at the base, glabrous and obscurely bluish green above, paler and laxly pilose beneath. The umbellate, hemispherical racemes are densely many flowered and are borne at the tips of short, few-leaved branches. The white flowers, 5 to 6 millimeters in diameter, are on graceful pedicels 3 to 6 meters long. Native to upland thickets at altitudes of 3,000 to 4,000 millimeters in western Szechwan. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 440.*)

52460. RHODODENDRON CHARTOPHYLLUM Franch. Ericaceæ.

An evergreen bushy species with white to lavender glabrous flowers, 3 to 4 centimeters long, broadly funnel formed and five lobed, on elongated flowering branches. The oblong or narrowly lanceolate leaves are rigidly coriaceous, glaucous above and sparsely scaly below. Native to Yunnan and extending from western Szechwan to Tatsienlur (Soulie). (Adapted from *The Garden, vol. 78, p. 304*, and from *Morot, Journal de Botanique, vol. 9, p. 398.*)

52461 to 52464. PYRUS spp. Malaceæ. **Pear.**

From Arlington Farm, Va. Seedlings of Asiatic hybrid pears. Numbered March, 1921. Quoted notes by J. Marion Shull, botanical artist, Office of Fruit-Disease Investigations, Bureau of Plant Industry.

"Oriental hybrid pear seedlings bred by Dr. M. B. Waite, Office of Fruit-Disease Investigations, United States Department of Agriculture, for blight resistance and grown at Arlington Farm."

23564—23——3

52461 to 52464—Continued.

52461. PYRUS sp.

"A tree of medium size and vigor with light-brown bark and fairly upright branches. The light-green leaves are 2 inches long and 1 inch wide. The tree is apparently productive and is probably as blight resistant as the *Kieffer*. The large obovate to elliptic light-yellow fruit, 3¼ inches long and 3 inches in diameter, has a medium-thick, smooth, brown-dotted skin and juicy, crisp, mild-flavored flesh, granular but finer grained than that of the Angoulême. The fruit ripens September 15 to 30, and the dessert quality is good. The medium-stout stalk is 1 inch long and inserted in a slight cavity."

52462. PYRUS sp.

"A large vigorous tree with dark-brown bark, moderately spreading branches, and abundant foliage. The blight resistance is probably not equal to that of the *Kieffer;* the original tree is dead from blight at the roots and is now known only by top-worked trees and nursery stock. The smooth, thin-skinned yellow-russet fruit, 2 inches in diameter and of slightly irregular pyriform shape, ripens about September 10. The rich, juicy, medium fine-grained flesh is rather acid and of excellent dessert quality."

52463. PYRUS sp.

"A somewhat spreading tree of medium size and vigor, with only moderately abundant light-green leaves 2¼ inches long. The blight resistance is good. (No blight has been observed, and the tree is very vigorous in the nursery row.)

"The obovate to obconic fruit, 2 to 2¼ inches in diameter, of regular form, with a short stout stem inserted in a very slight depression, ripens September 1 to 10. The golden russet to red-brown rather smooth skin has numerous grayish dots. The flesh is of very good dessert quality and is melting, sirupy, and Seckellike."

52464. PYRUS sp.

"This large, vigorous, somewhat spreading tree with dark-brown bark is very blight resistant. (No blight observed.) The regular obovate fruit is 3¼ inches long and 3 inches in diameter, with a medium-long, rather slender stem inserted in a pronounced cavity. The medium-thin skin is yellow, tending to redden in the sun. The juicy tender flesh ripens about September 15 and is of good dessert quality. It is distinctly sweeter, juicier, tenderer, of better quality, and less stony than the Kieffer."

52465 and 52466.

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received January 14, 1921.

52465. HYDNOCARPUS ANTHELMINTHICA Pierre. Flacourtiaceæ.

Maikrabao.

"(No. 83. Chiengmai, Siam.)" (*Rock.*)

For a full discussion of this species and its use in the treatment of leprosy, see United States Department of Agriculture Bulletin No. 1057, "The Chaulmoogra Tree and Some Related Species."

For previous introduction, see S. P. I. No. 48227.

52465 and 52466—Continued.

52466. LIVISTONA sp. Phœnicaceæ. **Fan palm.**

"(No. 85. Chiengmai, Siam.) This is in all probability a new species; it has large oval blue fruits, the flesh of which is eaten by the natives after it has been boiled. They sell three for 1 salung ($0.067)." (*Rock.*)

52467. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From the city of Guatemala, Guatemala. Fruits and roots presented by Don Marcial Prem, through Dr. W. E. Safford, economic botanist, United States Department of Agriculture, Washington, D. C. Received January 26, 1921.

"The fruits of this variety are quite large (those received, 24 and 28 ounces, respectively), almost spherical, dark green, and practically free from corrugations, though there are small depressions at both the stem and blossom ends of the fruits. Broad ranks of thick, coarse spines extend from stem to fissure of the fruits, between which are narrow bands that are practically free from spines. The quality of the fruit is good, though this is not considered the best of the Guatemalan varieties." (*L. G. Hoover.*)

52468. HYDNOCARPUS ANTHELMINTHICA Pierre. Flacourtiaceæ.
Maikrabao.

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received January 20, 1921.

"From Korat, Siam. The seeds furnish an oil used by the Chinese in the treatment of leprosy. I was told that the *maikrabao*, as this tree is called, grows plentifully along the rivers of Korat. No one at Korat, except the old natives, seemed to know anything about it. Finally I was taken out into the jungle, and there along some of the smaller tributaries to the main streams were Hydnocarpus trees in plenty. I photographed them in their native haunts. It would be well to plant those I sent along river banks or swampy places in Florida. Although they do well in cultivation, 1,000 feet is about the altitude at which they grow wild." (*Rock.*)

For an illustration of maikrabao trees, see Plate I.

52469 to 52489. SACCHARUM OFFICINARUM L. Poaceæ.
Sugar cane.

From Belmonte, Cienfuegos, Cuba. Seeds presented by Robert M. Grey, Harvard Experiment Station. Received February 4, 1921. Quoted notes by Mr. Grey.

"All numbers refer to Harvard seedlings."

52469. "*H 11.027.* Good for all situations; fine for milling; tolerates mosaic."

52470. "*H 11.050.* Robust grower of upright habit; tolerates mosaic."

52471. "*H 15.* A fine cane for hilly land; high in sucrose."

52472. "*H 144.* Resistant in old lands."

52473. "*H 219.* An improved Crystalline cane seedling."

52474. "*H 289.* Resistant against cane root disease; robust."

52469 to 52489—Continued.

52475. "*H 598.* Persistent cane for old land; resists mosaic."

52476. "*H 1418.* Heavy yield of cane; tenacious grower on low land."

52477. "Wild seedling from H 2038, naturalized; seed grows spontaneously along brooks."

52478. "*H 4121.* Heavy, upright, robust grower."

52479. "*H 4124.* Immune from mosaic; 90 per cent of the seedlings are resistant or immune. Seed held vitality over six months."

52480. "*H 6047.* Persistent grower on low land; high in carbohydrates."

52481. "*H 6112.* Resistant against mosaic; fine root tenacity."

52482. "*H 6113.* Resistant against mosaic; hardy; ratoons well."

52483. "*H 6241.* Tall, vigorous, upright; resistant against mosaic."

52484. "*H 6142.* Fine for general cultivation; high in sucrose."

52485. "*H 6286.* Tall, persistent-rooting variety; resistant against mosaic."

52486. "*H 6296.* Immune from mosaic, five years among mosaic plants; stands drought."

52487. "*H 9050.* A very robust grower, tolerant; not injured by mosaic."

52488. "*H 9092.* A very robust grower; tall, resistant; heavy tonnage."

52489. "*H 9176.* A robust grower on good land; high in carbohydrates; tolerant."

52490 and 52491. Rubus idaeus L. Rosaceæ.

European raspberry.

From Maidstone, England. Plants presented by George Bunyard & Co., Royal Nurseries. Received February 5, 1921.

52490. *Park Lane.* This is undoubtedly one of the sweetest fruits grown; it is fairly large, roundish, and well flavored; the clusters are moderately large. The fruit is too tender for market use but is unrivaled for garden culture. The stout vigorous canes, often reaching a height of 6 feet, are covered with slender, almost soft bristles. The leaves are large and broad with overlapping flat leaflets which are held out horizontally. This variety was grown by Mr. Pyne, of Topsham, Devon, and introduced in 1912. (Adapted from *Journal of Pomology, vol. 1, p. 243.*)

52491. *Pyne's Royal.* This raspberry has fully satisfied the hopes that it evoked in 1913 when it was introduced and is now the largest of all varieties grown. Its size, however, has not detracted from its cropping powers, and it will, we imagine, be grown largely for market when it becomes more plentiful. The rich-red firm fruits, often 4 inches in circumference, are rather conical, of moderate sweetness, and often occur in clusters of twenty. The stout canes bear scattered dark thorns and large, rugose, down-curved leaves. This variety was grown by Mr. Pyne, of Topsham, Devon, in 1907, and introduced in 1913. (Adapted from *Journal of Pomology, vol. 1, p. 243.*)

AN AVENUE OF THE SIAMESE MAIKRABAO TREES, WHICH PRODUCE AN OIL VERY SIMILAR TO THAT OF THE CHAULMOOGRA TREE. (HYDNOCARPUS ANTHELMINTHICA PIERRE, S. P. I. No. 52468.)

Seeds from the trees shown here were forwarded to Washington under S. P. I. No. 51773, and later, under S. P. I. No. 52468, more seeds, collected from trees near Korat in eastern Siam, were sent in. The oil from these trees is very similar to the true chaulmoogra oil and is used in the same way in the treatment of leprosy. (Photographed by J. F. Rock, Klong Sarn, Bangkok, Siam, October, 1920; P22628FS.)

THE TOCTE, A NATIVE ECUADORIAN WALNUT TREE. (JUGLANS SP., S. P. I. No. 52611.)

This tree strongly resembles our native black walnut (*Juglans nigra*), but the foliage is perhaps larger. The nuts are 1½ inches in diameter, and the kernel has a mild pleasant flavor. The wood is said to be fine grained and to take a beautiful finish. (Photographed by Wilson Popenoe, Ambato, Ecuador, January, 1921; P18327FS.)

52492. ANANAS SATIVUS Schult. f. Bromeliaceæ. **Pineapple.**

From Bahia, Brazil. Shoots presented by Dr. V. A. Argollo Ferrão. Received February 5, 1921.

"*Abacaxi.* Cultivated on the south of Bahia on a peculiar sandy soil, good only for that crop. They come to market on sailing vessels." (*Argollo Ferrão.*)

Previous introductions of *abacaxi* are apparently more or less resistant to the wilt disease, which has proved very destructive to this crop.

52493 and 52494.

From Bangkok, Siam. Collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received February 9, 1921. Quoted notes by Mr. Rock.

52493. IPOMOEA CARNEA Jacq. Convolvulaceæ. **Morning-glory.**

"Cuttings of a large woody, scandent or rambling shrub, which can be grown over trellis work and is one of the largest flowered and handsomest species I know. It is covered with pink flowers all the year round and is easily grown from cuttings."

52494. IRVINGIA MALAYANA Oliver. Simaroubaceæ.

"The seeds are very rich in fat, and an oil is extracted from them; they are also eaten roasted and remind one of butternuts. The seeds are sold on the market."

A tree native to Malaleka, with thick elliptic leaves 4 inches long and small flowers in axillary racemes. The large fruit is drupaceous. (Adapted from *Hooker, Flora of British India, vol. 1, p. 522.*)

52495. ADONIS VERNALIS L. Ranunculaceæ.

From Groningen, Netherlands. Seeds presented by A. Fiet, director, Botanic Garden. Received January 5, 1921.

The best and most commonly cultivated Adonis and a desirable and very effective early bloomer.

For previous introduction, see S. P. I. No. 51762.

52496 and 52497.

From Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received February 10, 1921.

52496. FICUS GLOMERATA Roxb. Moraceæ. **Fig.**

"*Madua.* A large Ficus which grows on the banks of the Meping River. The edible fruits are red when ripe, a little smaller than the Smyrna fig, and are borne on the trunk and branches in great numbers." (*Rock.*)

For previous introduction, see S. P. I. No. 12111.

52497. MOMORDICA COCHINCHINENSIS (Lour.) Spreng. Cucurbitaceæ.

"A large climber which grows along the banks of the Meping River. The large orange-colored spiny fruits are edible before maturity." (*Rock*).

For previous introduction, see S. P. I. No. 34692.

52498 to 52502. TRITICUM AESTIVUM L. Poaceæ. Common wheat.

(*T. vulgare* Vill.)

From Cambridge, England. Seeds presented by Prof. H. R. Biffen, Department of Agriculture, Cambridge University. Received February 11, 1921. Quoted notes by Prof. Biffen.

"Pure lines of *Yeoman* wheat which, I believe, are better in quality than the ordinary stocks in cultivation here, because the total nitrogen content is distinctly higher than that of ordinary stocks."

For previous introduction, see S. P. I. No. 46797.

52498. "*Yeoman C.*"
52499. "*Yeoman F.*"
52500. "*Yeoman H.*"
52501. "*Yeoman S.*"
52502. "*Yeoman Y.*"

52503. TRITICUM TURGIDUM L. Poaceæ. Poulard wheat.

From Haifa, Syria. Seeds presented by Dr. A. Khazanoff, Jewish Colonization Association. Received February 11, 1921.

"Wheat of the *Hati* variety, which I secured from the Jewish colony of Yabniel in the district of Tiberias, Lower Galilee, Syria. This is the principal variety grown there and in the neighboring valleys. It does very well in the hot dry climate which characterizes that region, and may be of service in your hot and arid Southwest." (*Khazanoff.*)

52504 and 52505.

From Santa Cruz de la Sierra, Santa Cruz, Bolivia. Seeds presented by Herman Meschurtz. Received February 14, 1921.

52504. PIPTADENIA CEBIL Griseb. Mimosaceæ.

"*Currebau-sevil*, which we are using for tanning, and by the use of which I tanned a bull hide in three months. The tree grows in the poorest soil, also in stiff clay, and needs little water; it may be very useful in the Southern States." (*Meschurtz.*)

For previous introduction, see S. P. I. No. 48074.

52505. PROSOPIS sp. Mimosaceæ.

"*Cuperi algaroba.* A handsome shade tree which grows rapidly, yields fine wood for furniture, and bears large pods, 12 inches long and three-fourths of an inch in diameter, of which all live stock are fond." (*Meschurtz.*)

52506. QUERCUS ILEX L. Fagaceæ. Oak.

From Thrace, Turkey. Seeds presented by Stephen R. Capps, United States Geological Survey, through T. H. Kearney, United States Department of Agriculture. Received February 19, 1921.

"An evergreen live oak, desirable as an ornamental and hedge plant, with a hollylike, usually crinkly leaf, ranging in shade in different individuals from yellow-green to dark green. The leaves are very dense, so that the bush looks solid, and about like holly leaves in that they are prickly enough to discourage animals and children but not spiny enough to be really objectionable. The tough gnarled stems are very strong, and the smooth mottled gray bark is about like holly bark.

"The plant takes kindly to pruning, as witnessed by those bushes growing along trails where sheep and goats have kept them trimmed back. It is hardy

in a climate much like that of Washington, D. C., and is unaffected by temperatures of 0° to 110° F. These seeds were collected in Thrace, near the base of the Gallipoli Peninsula, where the plant is very common; it has a vertical range from sea level to 3,000 feet, the highest mountains in the district where it is found. The tree is adapted to a wide variety of soils, growing vigorously in beach sand, lowland silts, residual sandy and clayey soils, and on rocky surfaces with little soil.

"The bush grows to a height of 6 to 10 feet. I saw one individual, probably of the same species, that had a trunk 8 inches in diameter and was 20 feet high.

"To get the acorns before the crows and magpies beat me to them, I had to pick them before they fell naturally." (*Capps.*)

For previous introduction, see S. P. I. No. 30389.

52507. Dioscorea alata L. Dioscoreaceæ. Yam.

From Crescent City, Fla. Presented by H. D. Collette, who grew it from material from the West Indies supplied by Samuel Rosen, New York City. Received February 24, 1921.

"Cuttings of a yam with yellowish flesh, somewhat moist, but of good quality for preparing mashed yam." (*R. A. Young.*)

52508. Raphanus sativus L. Brassicaceæ. Radish.

From Tientsin, Shantung, China. Seeds presented by Mr. K'ung, through H. S. Conard, Grinnell, Iowa. Received February 24, 1921.

"*Lo-pu.* A very 'sweet' radish from Tientsin, Shantung, China." (*K'ung.*)

52509. Eriogonum wrightii subscaposum S. Wats. Polygonaceæ.

From Ness, Neston, England. Seeds presented by A. K. Bulley. Received February 24, 1921.

A low perennial found in the high montane belt of southern California. The leafy branches are short, forming a close, dense mat, from which arise the short flowering stems. The bright-pink flowers are clustered near the ends of the stems and form a sharp contrast to the mat of small white woolly leaves. (Adapted from *Jepson, A Flora of California, pt. 4, p. 415.*)

52510 to 52513.

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received February 17, 1921. Quoted notes by Mr. Rock.

52510. Diospyros mollis Griffith. Diospyraceæ.

"One of the most valuable dye plants in Siam. The Chinese import yearly 3,000,000 ticals ($804,000) worth of silk, pay the duty on it, and all for the purpose of dyeing the silk black; every bit is again exported. There are large but rather primitive dye factories here. It is said that the Chinese have tried to grow the tree in China but were not successful. I have seen material dyed black which had been washed twice a week for three years and it certainly was still as black as black could be. The dyeing is said to be a laborious process. The fruit must be still green when collected for dyeing purposes; it is mashed in water and the material is dipped into it, the water is then thrown away, and the pulp is pressed and placed again in water; this process is repeated many times. The material must be dried in the sun after each dipping. It is difficult to secure ripe seeds, as the fruits are col-

52510 to 52513—Continued.

lected before maturity. The tree is about 25 feet high, with fruits the size of a large cherry."

52511. INGA LAURINA (Swartz) Willd. Mimosaceæ.

"A small ornamental tree native to South America, which is cultivated in Singapore."

A tropical American tree, 9 to 15 meters high, with leaves composed usually of four leaflets; the flower clusters are longer than in other members of this genus. As a shade tree for coffee this species is second in importance only to the "guava" (*Inga vera*). Specimens have been found, in some cases at least, with tubercles on the roots. The tree is one of those employed in the cacao cultivation of Guadeloupe in making hedges or windbreaks which are planted across the direction of the prevailing winds at distances of 100 meters. (Adapted from *Cook and Collins, Economic Plants of Porto Rico, Contributions from the U. S. National Herbarium, vol. 8, p. 167.*)

52512. LAGERSTROEMIA sp. Lythraceæ.

"A small tree with exceedingly ornamental flowers which are very large and purplish pink. It is found in the dry jungle of Korat."

52513. SINDORA sp. Cæsalpiniaceæ.

"A tree growing in the dry jungle of Morat, eastern Siam. It is quite ornamental, and the pods are spineless."

52514. HYDNOCARPUS CASTANEA Hook. f. and Thoms. Flacourtiaceæ.

From Moulmein, Burma. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received February 21, 1921. Quoted notes by Mr. Rock.

"A large tree 50 to 80 feet in height with smooth light-brown bark and fruits the size of a large orange, ripening from March to July. Only one tree among thousands was found with ripe fruits on January 7, 1921. It was loaded with ripe and semiripe fruits. The tree grows on steep rocky hills along watercourses near the Karen village of Oktada, several miles from Paung, in the Martaban Hills, on the Kalama Mountain Range. The trees must be planted in gravelly, well-drained soil.

"Strange to say, the people in Moulmein know nothing about this tree, and the superintendent of the leper asylum here did not know that the tree grows at all in Burma. The foresters I met in the jungle never heard of the name *kalaw*, which is the Burmese name of the tree. Many of the Burmese I interrogated knew the name but not the tree; they knew the seeds from the bazaars where they are sold. Only people actually making a living by collecting these seeds can give information."

For a full discussion of this tree, see "The Chaulmoogra Tree and Some Related Species," United States Department of Agriculture Bulletin No. 1057.

52515 to 52529.

From Groningen, Netherlands. Presented by C. Broekema, director, Groninger Zaaizaadvereeniging. Received February 2, 1921. Quoted notes by Mr. Broekema.

52515 and 52516. AVENA SATIVA L. Poaceæ. **Oats.**

52515. Seeds of a form of oats with a light husk.

52516. Seeds of a form of oats with dark husk.

52515 to 52529—Continued.

52517 to 52519. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. **Barley.**

52517. "Seeds of *Bocumer gerst* (winter barley)."

52518. "Seeds of *Winter gerst*."

52519. *Mansholt wintergerst II.* Seeds of the first, second, and "after" crop. It is shorter and stiffer than *Mansholt wintergerst I;* however, it is susceptible to rust. Of high weight per hectoliter. (Adapted from *Autumn (Aug., 1919) Catalogue, Groninger Zaaizaadvereeniging.*)

52520 to 52522. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

52520. "Tubers of a form which has been extensively experimented with here and proved one of the best to be found."

52521. "Tubers of a form which has been extensively experimented with here and which has proved one of the best."

52522. "Tubers of a potato under extensive experimentation here which has proved one of the best."

52523 to 52529. TRITICUM AESTIVUM L. Poaceæ. **Common wheat.** (*T. vulgare* Vill.)

"Varieties of winter wheat which surpass all those which are known in this country and which in my opinion deserve to be tested in every region where winter wheat is cultivated."

52523. *Addens.* seeds of the original, especially developed for light soils by N. G. Addens, at Bellingwolde. Trials on the better sand and peat soils are to be recommended. The cold resistance of this wheat is very good; the yield is about 40 hectoliters per hectare; the straw is of medium length and fairly stiff; and the head is not heavy. This variety is developed from the so-called *Belgian wheat* and received from this a high value for baking. (Adapted from *Autumn Catalogue (Aug., 1919), Groninger Zaaizaadvereeniging.*)

52524. *Diekhuis I.* Seeds of the "after crop." The straw is long and stiff, and the grain red; the cold resistance is somewhat better than that of Wilhelmina; and the yield is good. It is more and more in demand for those soils which are not so well adapted for the growing of wheat. (Adapted from *Autumn Catalogue (Aug., 1919), Groninger Zaaizaadvereeniging.*)

52525. *Millioen III.* Seeds of the original and "after" crop. The variety is leafy with a large white grain. In yield and cold resistance it compares with Wilhelmina. (Adapted from *Autumn Catalogue (Aug., 1919), Groninger Zaaizaadvereeniging.*)

52526. "*Pantso.*"

52527. "*Wieb.*"

52528. "*W. & E. P.*"

52529. "*W. & W. D. 14.*"

52530 and 52531.

From Jocolo, Izabal, Guatemala. Seeds presented by Harry Johnson. Received February 18, 1921. Quoted notes by Mr. Johnson.

52530. BYRSONIMA CRASSIFOLIA (L.) H. B. K. Malpighiaceæ. **Nance.**

"A variety of the common nance, called here *nance agrio*, to distinguish it from the ordinary sweet variety which it much resembles in the tree

52530 and 52531—Continued.

and fruit. The fruits are pleasantly acid and do not seem to have quite so strong an odor as that of the sweet one. Both the sweet and sour varieties are made into a preserve. The fruits are packed in jars with a layer of sugar, then a layer of fruit, etc., afterwards some aguardiente (an inferior brandy) is added. This recipe has ceased to be of interest in the north. However, I can assure you it is good."

For previous introduction, see S. P. I. No. 43429.

52531. CROTALARIA STRIATA Schrank. Fabaceæ.

"Locally called *chipilín*. It is an ornamental perennial species reaching about 6 feet in height and spread. The spikes of pea-shaped yellow flowers and the young leaves are boiled with rice or meat and are very good. The plant is also good for forage."

For previous introduction, see S. P. I. No. 50751.

52532. XANTHOSOMA sp. Araceæ. **Yautia.**

From Guatemala. Presented by Harry Johnson. Received March 17, 1921.

"Corms of the *malanga colorado*. The leafstalks are slightly reddish along the groove. It is a good variety around Jocolo." (*Johnson.*)

"This yautia is pink skinned and pink and white fleshed. It is mealy when cooked and of good flavor. The leaf stems are plain green, with slightly reddish or purplish shading near the margin of the sinus wings. The blade forms about a 95° angle with the petiole." (*R. A. Young.*)

52533. CASTANOPSIS ARGENTEA (Blume) A. DC. Fagaceæ.

From Buitenzorg, Java. Seeds presented by the director of the Botanic Garden. Received February 16, 1921.

An evergreen tree 50 to 60 feet high, with thinly coriaceous, lanceolate leaves, shining above and sometimes quite silvery beneath. Native to Tenasserim and Martaban. (Adapted from *Hooker, Flora of British India, vol. 5, p. 621.*)

52534. TAMARIX APHYLLA (L.) Karst. Tamaricaceæ. **Athel.**
(*T. articulata* Vahl.)

From Indio, Calif. Cuttings presented by Bruce Drummond, Government Date Gardens. Received February 15, 1921.

A bush or often a small tree 10 to 50 feet high, native to India, with pink flowers one-eighth of an inch in diameter, in slender spikes more or less interrupted. The branches are fastigiate, elongated, and slender, and the leaves are reduced to a very short sheath, with a minute tooth. (Adapted from *Nicholson, Illustrated Dictionary of Gardening, vol. 4, p. 7, 1889.*)

For previous introduction, see S. P. I. No. 45952.

52535 to 52545. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From Soledad, Cienfuegos, Cuba. Seed presented by Robert M. Grey. Received February 4, 1921. Quoted notes by Mr. Grey.

"H refers to Harvard seedlings."

52535. "*H 4124.* Resistant against mosaic; 90 per cent of the progeny are exempt. The seed held vitality from January to July."

52536. "*H 6241.* Harvard seedling; parent immune from mosaic."

52535 to 52545—Continued.

52537. "*H 6296.* Harvard seedling; parent immune from mosaic."

52538 to 52545. "These are resistant or tolerant, are robust growing, and suitable for cultivation on our old lands."

52538. "*H 10.028.*"

52539. "*Java 51.*"

52540. "*H 1304.*"

52541. "*H 1418.*"

52542. "*H 1419.*"

52543. "*H 4121.* A heavy Javan seedling from *J 247;* resistant against mosaic."

52544. "*H 9029.*"

52545. "*H 9092.*"

52546 to 52556. Triticum spp. Poaceæ.

From Maison Carree, Algiers. Seeds presented by Prof. L. Ducellier, L'École d'Agriculture. Received February 26, 1921. Quoted notes from Ducellier, Les Blés du Sahara, except as indicated.

"The Sahara wheats appear to be perfectly adapted to the Saharan regions; the heads and seeds are normally developed. The numerous related forms which are in the oases seem to indicate an ancient culture. The heads are remarkably well filled, each measure of grain sown yields 10 to 100 measure, and in certain cases, considering the climatic conditions, the yield is comparable with the best wheats of Europe. It does not seem that the ordinary varieties of wheat, even those with a great yield, can become under the best conditions as floriferous as certain Saharan varieties. This peculiar property of the Saharan wheats makes them interesting objects of hybridization."

52546 to 52552. Triticum spelta L. **Spelt.**

52546. "*Abdessalem.* From Taghouzi, Province of Gourara; a white beardless wheat, distinguished from European wheat by its shorter and more compact head."

52547 and 52548. "*Bhamoud.* From Khenessa de l'Augrout, Gourara. This grain is of excellent quality."

52547. "With red grain."

52548. "With white grain."

52549. "*El Harcha.* From Gourara. Also grown in the Province of Tesbit (Timmimoun)."

52550. "*Ali ben Maklouf*, or *Ali*, or *Maklouf.* From Gourara."

52551. "*Lebbaga.* From Gourara."

52552. "*Masraf.* From Gourara. A white bearded wheat which can not be completely husked by hand on account of its firm glumes."

These seeds were received as *Triticum spelta* var. *saharae.*

52553 to 52556. Triticum aestivum L. **Common wheat.**
(*T. vulgare* Vill.)

52553. "*Bahtane.* From Gourara. It has also been grown in the oasis of Timmi, Touat."

52554. "*Baroudi.* From the oasis of Timmi, Touat."

52555. "*El Moumena.* From Gourara."

52556. "*Ferck*, or beardless *Hamra.* From Gourara. Also grown in the oasis of Timmi, Touat."

These wheats were received as *Triticum vulgare* var. *oasicolum.*

52557 to 52565. Triticum aestivum L. Poaceæ. Common wheat.

(*T. vulgare* Vill.)

From Cowra, New South Wales. Seeds presented by J. T. Pridham, plant breeder, Experimental Farm, through J. A. Clark, agronomist, in charge of Western Wheat Investigations, United States Department of Agriculture. Received March 1, 1921. Quoted notes by Mr. Pridham, except as otherwise noted.

"Pure-line selections of *Hard Federation* wheat." (*Clark.*)

An early spring wheat, short, with strong white straw and erect dense awnless spikes with small hard vitreous white kernels which are very attractive and doubtless would attract buyers and bring a premium over other white wheats on American markets, as is the case in Australia. The plant has the distinctive brown, hard, and general appearance of *Federation* in the field, but differs in being slightly taller and earlier, in having a square and shorter spike, broader and squarer shoulders, and shorter, rounder, and harder kernels. The variety *Hard Federation* has been grown commercially in Australia since 1914. During the past few years it has replaced the Federation variety in many sections because of equal yields and better milling quality of the grain. (Adapted from *Australian Wheat Varieties in the Pacific Coast Area, United States Department of Agriculture Bulletin No. 877, p. 11.*)

52557. "Wheat No. 24 (A8)."
52558. "Wheat No. 30 (A8)."
52559. "Wheat No. 55 (A7)."
52560. "Wheat No. 64 (A6)."
52561. "Wheat No. 66 (A6)."
52562. "Wheat No. 69 (A6)."
52563. "Wheat No. 71 (A6)."
52564. "Wheat No. 71 (A9)."
52565. "Wheat No. 73 (A9)."

52566. Arundo plinii Turra. Poaceæ.

(*A. mauritanica* Desf.)

From Algiers, Algeria. Rhizomes presented by Dr. L. Trabut. Received February 28, 1921.

This grass is smaller in all parts than *Arundo donax:* the culms are mostly 1.5 meters tall and 4 to 7 millimeters thick; the blades, 1 to 2 centimeters wide, are smooth or scabrous on the margins only. The brown or yellow panicle is rather narrow and reaches 30 centimeters in length. Native to the Mediterranean region. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 2, p. 334.*)

52567. Pyrus communis × lindleyi. Malaceæ. Pear.

From Fruitland Park, Fla. Cuttings presented by Louis Bosanquet. Received February 11, 1921.

"*Cincincis* pear." (*Bosanquet.*)

A variety which resembles the *Sha Lea* pear very closely. It is the parent of numerous seedlings fruited by S. F. Smith. The medium to small fruit is of fairly regular oval form, with slightly roughened skin, light colored with numerous brown dots. The flesh is of yellowish white color with little flavor but juicy. The texture is crisp and breaking; and the core is large and gritty with large flattish black seeds. (Adapted from *Report of the Agricultural Experiment Station, Ithaca, N. Y., Bulletin No. 332, p. 479.*)

52568. PYRUS USSURIENSIS Maxim. Malaceæ. **Pear.**

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received February 28, 1921.

A Chinese pear stock recently discovered by Prof. F. C. Reimer, of the Southern Oregon Experiment Station, to be the most resistant to the blight which attacks and destroys the trees. (Adapted from *Yokohama Nursery Co., Descriptive Catalogue for 1920, p. 55.*)

For previous introduction, see S. P. I. No. 44051.

52569. EUGENIA UNIFLORA L. Myrtaceæ. **Pitanga.**

From Porto Alegre, Rio Grande do Sul, Brazil. Seeds presented by G. S. Froes. Received January 12, 1921.

The pitanga is the best of the Eugenias. It is grown to some extent in Florida and California, but it has not been given the attention it deserves. No horticultural varieties have been established, since the tree is rarely propagated vegetatively, although there is considerable variation among seedlings.

For previous introduction, see S. P. I. No. 37026.

52570. TAIWANIA CRYPTOMERIOIDES Hayata. Pinaceæ.

From Jamaica Plain, Mass. Plants presented by Prof. C. S. Sargent, director, Arnold Arboretum. Received March 1, 1921. Collected originally by E. H. Wilson.

The loftiest tree in the forests of Taiwan is the Taiwania, which rears its small moplike crown well above all its neighbors. The average height of this tree is from 150 to 180 feet, but specimens exceeding 200 feet are known. The trunk is sometimes as much as 30 feet in girth, quite straight, and bare of branches for 100 to 150 feet. It is a strikingly distinct tree, singularly like an old Cryptomeria; both trees suggest gigantic lycopods. In the dense forests the crown is small, dome shaped or flattened, the branches few and short, and one wonders how so little leafage can support so large a tree. When the top is broken by storms, the lateral branches assume an erect position. In the more open forest the branches are massive and wide spreading, the crown is oval or flattened, and on small trees the branchlets are often pendent. The Taiwania sheds its small branchlets as do Cryptomeria, Cunninghamia, and Sequoia. (Adapted from *Journal of the Arnold Arboretum, vol. 2, p. 35.*)

For previous introduction, see S. P. I. No. 46980.

52571 to 52573.

From Kulara, via Cairns, Queensland. Seeds presented by J. A. Hamilton. Received February 24, 1921. Quoted notes by Mr. Hamilton.

52571. MUSA sp. Musaceæ. **Banana.**

"Wild banana."

52572. PIPER sp. Piperaceæ. **Pepper.**

"Wild pepper seeds. A very ornamental vine with very good fruits; it likes rich alluvial soil and plenty of moisture in the growing season. Of course it will not stand much frost, but as it is uninjured by the few frosty nights here the plant should thrive in southern California."

Received as *P. bancroftii*, for which a place of publication has not yet been found.

52573. (Undetermined.)

"A pretty tree which grows in alluvial soil near creeks; it bears prolifically very acid fruits which make a good preserve."

52574 to 52580.

From Ambato, Ecuador. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received February 4, 1921. Quoted notes by Mr. Popenoe.

52574. CARICA sp. Papayaceæ. **Babaco.**

"(No. 533a. Ambato, Ecuador. January 3, 1921.) Seeds of a rather dwarf species 8 to 10 feet in height, which can probably be grown in the open in southern California. The fruits are about a foot long and nearly seedless; from 17 good specimens only 10 seeds were obtained, and it is rare to find specimens which contain more than 3 seeds. The fruit is like a slender papaya in form and appearance, but has highly aromatic flesh containing much papain. It is not good for eating until cooked, when it yields an excellent sauce with plenty of 'character.' The local name for this fruit is *babaco* and the plant is commonly propagated by cuttings. For cultivation in southern California and for hybridizing with the common papaya, I believe it to be a fruit of genuine merit."

52575. DURANTA TRIACANTHA Juss. Verbenaceæ.

"(No. 536a. Ambato, Ecuador.) *Chivo.* A common indigenous shrub in ravines and on hillsides about Ambato, growing to a height of 15 feet and heavily armed with stiff sharp thorns, for which reason it ought to make an excellent hedge plant. Its pale-blue flowers, borne in clusters 3 or 4 inches long, are followed by golden berries half an inch in diameter. The plant should be sufficiently hardy for cultivation in California and Florida."

52576. FRAGARIA CHILOENSIS (L.) Duchesne. Rosaceæ.
Chilean strawberry.

"(No. 534. Ambato, Ecuador. December 29, 1920.) *Ambato* strawberry. That this plant has been cultivated at Ambato since a remote day is evidenced by the following passage, taken from Velasco, Historia del Reino de Quito, 1789: 'The strawberry of Quito, erroneously called *frutilla* (little fruit), since it is as large as two or three European strawberries. It bears every day in the year, and although it is common in several provinces, in no other is it produced in such abundance and perfection as in that of Tungurahua.'

"This remarkable fruit more recently attracted the attention of Robert Spruce, the English naturalist, who wrote (according to the Florist and Pomologist, Jan., 1870, p. 24): 'In the equatorial Andes the Province of Ambato is famed for its strawberries, which equal in size and flavor some of our best varieties and are to be seen exposed for sale in the market place of Ambato every day in the year. They are cultivated at an altitude of from 7,000 to 9,500 feet above the sea, where the mean temperature of the year ranges between 59° and 67° F.; but the best are grown a little way out of Ambato, as you go toward Guayaquil, on the slopes of Guachi (lat. 1¼° S.) at near 9,000 feet, and in a mean temperature of 60° F.; where, however, the thermometer does sometimes descend, perhaps half a dozen times in the year, to the freezing point in the early morning and scarcely ever on two successive days.'

"It is only in the region of Guachi that this species is commercially cultivated in Ecuador. Distant about 5 miles from Ambato, it lies at an altitude varying from 9,500 to 10,000 feet, and consists of a series of rolling hills, almost devoid of trees and with a soil which can be char-

52574 to 52580—Continued.

acterized as a very loose fine sandy loam of volcanic origin. The strawberry plantations cover an area of at least 60 acres; the plants are never irrigated, and the rainfall is probably not more than 15 inches per annum. Three times a year the fields are cleaned of weeds with a heavy hoe, this being the only cultural attention which they receive. The plants do not grow to a large size. The natives assert that the plants when irrigated make luxuriant growth but do not yield abundantly, nor is the fruit large and sweet, and this has, indeed, been observed by me to be the case when plants are grown in the town of Ambato under good cultural conditions. The fruit is harvested once a week throughout the year; there are, however, three seasons when the most abundant yield is obtained, these being in February, August, and December. The method of handling the fruit is primitive; it is carried to Ambato in kerosene boxes and is there sorted and packed in baskets for shipment by train to Guayaquil and Quito.

"In form this strawberry is less variable than most of the varieties grown in the United States. It is oblong-conical, sometimes oblong-ovoid, and from 1 to 2 inches long. When fully ripe it is light red in color, with the flesh pinkish white, meaty, juicy, and of mild, sweet flavor. The quality is not so good as that of the finest North American and European strawberries, but the fruit can be shipped much more successfuly because of its firm texture.

"This is one of the most remarkable and interesting fruits of Ecuador. It deserves careful attention at the hands of North American strawberry breeders and should be tested particularly in the dry Southwestern States. I would recommend for it a light, loose, sandy soil and very little water."

52577. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

"(No. 532a. Ambato, Ecuador. January 2, 1921.) A small tomato from the market of Ambato, Ecuador. The fruits are round, smooth, of attractive color and good quality. Of interest in connection with tomato breeding in the United States."

52578. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

"(No. 537a. Ambato, Ecuador.) This fruit is cultivated commercially in two sections of Ecuador, at Ambato and in the vicinity of Cuenca. Regarding its behavior in the latter region, Luis Cordero (Enumeración Botánica) says: 'This handsome fruit tree succeeds perfectly in our haciendas of rather warm climate, especially in the fertile and beautiful valleys of Paute and Gualaceo. Rare is the year in which the fruit is not abundant, and for this reason the well-known boxes of apricots preserved in sirup, so highly esteemed in other parts of the country, are never wanting.' Outside the Cuenca and Ambato regions, occasional trees are to be seen at Loja and northward in Imbabura Province.

"The ripening season at Ambato is in January and February. Propagation is commonly by seed and occasionally by grafting on the peach, apricot, and plum. The varieties grown in Ecuador (seedling forms in the main) are almost invariably small fruited and considerably inferior to the best North American and European sorts.

"For trial in the United States as a stock plant."

52574 to 52580—Continued.

52579. PRUNUS SEROTINA Ehrh. Amygdalaceæ. **Capulin.**

"(No. 538a. Ambato, Ecuador.) *Capulin.* Seeds from ordinary fruits. to be grown for trial as stock plants on which to graft superior varieties of this and other rosaceous fruits.

"Theodor Wolf ["Ecuador," published at Leipzig, 1892] says, 'The *capulin* is as distinguishing a characteristic of the Sierra as the cocoanut is of the coast. I do not doubt that it is indigenous, but commonly it is found in cultivation about the huts of the Indians, and in their fields and orchards.' The distribution of this species in the interandean region of Ecuador is widespread, but it is seen in much greater abundance in some regions than in others. Beginning in the northern part of the country, it is frequent in the Provinces of Carchi and Imbabura, but not particularly so in the former. Around the Lake of San Pablo it grows in great abundance. In Pichincha Province it is only fairly common. From Latacunga to Riobamba it is one of the few trees which grows upon the cold, sandy plains, and it here attains greater economic importance, perhaps, than in any other part of the country. In the Azuay it is almost as abundant and important, however, and in certain portions of this Province, together with that of Canar, it has the appearance of an indigenous species. In Loja it is not rare, but not sufficiently abundant to play a very important part in the list of economic products. Its range in general is from 6,000 to 11,000 feet.

"The historian Gonzalez Suarez recounts that the *capulin* tree was worshipped by the inhabitants of Canar Province in pre-Columbian times; and it is found in a wild, though not certainly indigenous, condition at the present time. It is a curious though not unique circumstance that it should be known throughout the country, even among the Indians who speak Quichua, under a name taken from the Aztec tongue. I have nowhere been able to find any other name than that of *capulin;* and in certain places the latter has been combined with Quichua words to make compound names such as *capulin-urcu* (the name of a certain mountain), and *sacha-capulin* (the name given to a species of Vallea thought to resemble the *capulin* in appearance).

"This plant, which is cultivated from Peru northward to Mexico, becomes a stout tree up to 40 or 45 feet in height. The leaves are oblong-lanceolate to lanceolate, finely serrate, and 3 to 5 inches long. The flowers, which are produced on slender racemes 3 to 8 inches long, are white and about three-quarters of an inch broad. The fruits resemble a European cherry in appearance; they are oblate or nearly round, from one-half to three-quarters of an inch in diameter, deep purplish maroon in color when fully ripe, with a thin, tender skin surrounding greenish flesh and a single hard seed. The flavor and quality of the fruit, as also the size, vary greatly; as commonly seen, the capulin is not over half an inch in diameter, and its flavor is disagreeably bitter. In several regions, however, there are very superior forms, well worthy of vegetative propagation. Some of the best ones are those of Cuenca and Ambato. At Catiglata, near the latter town, there is a famous tree whose fruit is large, very juicy, and as sweet as the best European cherries."

52574 to 52580—Continued.

52580. PRUNUS CERASIFERA MYROBALANA (L.) C. Schneid. Amygdalaceæ.
Plum.

"(No. 535a. Ambato, Ecuador.) *Mirabel.* This plum was brought from Europe in the early colonial days and is quite successful under the conditions which obtain in the region of Ambato (8,500 feet), the trees growing to large size and producing their popular fruits in great abundance. Propagation is by suckers, less commonly by seed, and occasionally by cuttings. The species is often used as a stock plant on which to graft the so-called *Reina Claudia* plum (properly *Chabot* or *Bailey*). The fruits ripen earlier than those of other plums now cultivated at Ambato, the season being from December to January; they are round to broadly oval in form, up to an inch long, bright red when fully ripe, with soft juicy flesh of pleasant flavor, much inferior in quality, however, to that of good northern varieties such as the *Bailey* and *Wickson Perfection*, both of which are now grown commercially at Ambato. For trial in the United States as a stock plant."

52581 to 52583.

From Beira, Mozambique. Seeds presented by Thomas Honey, acting Director of Agriculture, Governo do Territorio da Companhia de Mozambique. Received March 3, 1921. Quoted notes by Mr. Honey.

52581 and 52582. ANACARDIUM OCCIDENTALE L. Anacardiaceæ.
Cashew.

52581. "Large red-fruited variety."

52582. "Large yellow-fruited variety."

52583. LANDOLPHIA KIRKII Dyer. Apocynaceæ.

"Indigenous rubber vine."

A scandent shrub native to the Nile Land and Mozambique, with thinly coriaceous leaves, very variable in size and shape on the same branch, lanceolate to oblong, 1 to 4 inches long. The whitish flowers, 1½ inches long, are in many-flowered corymbs or in somewhat loose panicles, ovoid or much elongated, with spreading branches often passing into tendrils. The ovoid-globose fruits are 1 to 3 inches in diameter. This is one of the most important rubber plants of East Africa. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 4, sec. 1, p. 55.*)

For previous introduction, see S. P. I. No. 5023.

52584 and 52585. DATURA INNOXIA Mill. Solanaceæ.

From Teneriffe, Canary Islands. Seeds presented by Frank Anderson Henry, American consul. Received March 3, 1921.

"This species, indigenous in Mexico and tropical America, was introduced into the Canary Islands, southern Europe, and India at a very early day. It has been confused by many writers with the Old World *Datura metel*, but is easily distinguished from that species by the 10-angled limb of its corolla and the soft pubescence of its foliage and young branches. It was figured by Sims, in Curtis's Botanical Magazine, pl. 1440, in 1812, under the incorrect name *D. metel* and published by him in De Candolle's *Prodromus*. This species is identical with the *nacazcul*, or downy *toloatzin* of the Aztecs, who used it as a

narcotic and in certain religious ceremonies. It has recently been cultivated on the island of Montserrat, British West Indies, as a source of scopolamin, an alkaloid with the properties of *atropin*." (*W. E. Safford.*)

52584. Received as *D. stramonium*, but does not agree with that species.

52585. Received as *D. fastuosa alba*, but does not agree wtih that species.

Obtained from Sr. Don Rodolfo Godinez, ingeniero director de la Granja Agrícola.

52586 to 52594.

From Santiago, Chile. Seeds presented by F. Albert, consulting forester, Forestry Department, through the United States Forest Service. Received March 5, 1921.

52586. AEXTOXICON PUNCTATUM Ruiz and Pav. Euphorbiaceæ. **Tique.**

A Chilean tree belonging to the spurge family, with small colorless scales covering all of its parts, and with dense foliage. The leaves, quite stiff and narrowly oblong in shape, are very dark green on the upper surfaces and light green or even whitish below. The small white flowers are borne in short axillary racemes, and the fruits are small black olive-shaped drupes. By reason of its beauty the wood is admirably suited for the making of furniture, etc. (Adapted from *Castillo and Dey, Jeografía Vejetal del Río Valdivia, p. 68.*)

For previous introduction, see S. P. I. No. 49268.

52587. CAESALPINIA PECTINATA Cav. Cæsalpiniaceæ. **Tara.**
(*C. tinctoria* Domb.)

A tall upright spiny shrub or small tree, often planted for hedges in Peru. Here it grows under much the same conditions as the *molle*, or *pepper tree*, but extending into somewhat lower and drier situations. In the market of Lima *tara* pods are a regular article of trade, and are said to be used for dyeing, tanning leather, and making ink. The immature seeds of the *tara* contain underneath the skin a layer of edible flesh. It has a rather pleasant, slightly sweetish taste, like the arillus of the seeds of Inga and other leguminous trees. (Adapted from *O. F. Cook, note to S. P. I. No. 41323.*)

52588. CALDCLUVIA PANICULATA (Cav.) D. Don. Cunoniaceæ. **Tiaca.**

La Tiaca, also called *triaca* by the natives of Chile. The tree may reach a height of 15 meters. The leaves, up to 14 centimeters long, are elliptic, serrate, short stemmed, and frequently opposite. The white aromatic flowers which appear in spring are borne in axillary corymbs. The wood is excellent for carriage making. (Adapted from *Castillo and Dey, Jeografia Vejetal del Rio Valdivia, p. 57*, and from *Johnson, Gardener's Dictionary, p. 155.*)

52589. EUCRYPHIA CORDIFOLIA Cav. Eucryphiaceæ. **Muermo.**

An ornamental and also useful Chilean tree which attains a height of about 15 feet, with thick, leathery, shining leaves and aromatic white flowers which appear in the spring and make the tree a beautiful sight. Because of the abundance of nectar, this tree is a favorite with the bees. The bark, rich in tannin, is utilized in dyeing and also in medicine. (Adapted from *Castillo and Dey, Jeografía Vejetal del Río Valdivia, p. 81.*)

For previous introduction, see S. P. I. No. 49270.

52586 to 52594—Continued.

52590. LAURELIA SEMPERVIRENS (Ruiz and Pav.) Tulasne. Monimiaceæ. (*L. aromatica* Juss.) **Chilean laurel.**

"A handsome tree of southern Chile, with durable wood, which is never bored by insects and is much used for flooring. An excellent tree for our northwest coast." (*W. E. Safford.*)

For previous introduction, see S. P. I. No. 49272.

52591. MAYTENUS BOARIA Molina. Celastraceæ. **Maiten.**

"An ornamental Chilean tree of weeping habit, with small gray-green and orange fruits. Superficially it resembles the pepper tree (*Schinus molle*). It thrives well as far north as San Francisco and should be exploited as a shade tree for dry regions. The young branches are much relished by cattle." (*Fairchild.*)

52592 to 52594. NOTHOFAGUS spp. Fagaceæ.

52592. NOTHOFAGUS DOMBEYI (Mirb.) Oerst. **Coigüe.** (*Fagus dombeyi* Mirb.)

A majestic tree, with leathery, oval, or elliptic short-stemmed leaves which are of an intense shining-green color. It is native to Chile, where it will grow in soil too damp for cultivation. The wood is quite valuable for building purposes. (Adapted from *Castillo and Dey, Jeografía Vejetal del Río Valdivia, p. 39.*)

For previous introduction, see S. P. I. No. 49274.

52593. NOTHOFAGUS OBLIQUA (Mirb.) Blume. **Roble.** (*Fagus obliqua* Mirb.)

A tall deciduous tree, with oval-oblong clear-green leaves and 3-seeded fruits. The wood, which is considered a valuable timber, varies in quality with the nature of the soil. The streets of the city of Valdivia are paved with blocks of wood of this tree. It is said to be the most northerly of the Chilean beeches. (Adapted from *Castillo and Dey, Jeografía Vejetal del Río Valdivia, p. 35.*)

For previous introduction, see S. P. I. No. 49275.

52594. NOTHOFAGUS PROCERA Oerst. **Rauli.** (*Fagus procera* Poepp. and Endl.)

A deciduous Chilean timber tree, once abundant in the province of Valdivia, but now comparatively scarce owing to the great demand for its wood which is reddish and compact, and is used for parquet flooring, cabinetwork, etc. (Adapted from *Castillo and Dey, Jeografía Vejetal del Río Valdivia, p. 36.*)

52595. CALOPHYLLUM INOPHYLLUM L. Clusiaceæ. **Alexandrian laurel.**

From Manila, Philippine Islands. Seeds presented by Adn. Hernandez, director, Manila Bureau of Agriculture. Received February 26, 1921.

This tropical tree is widely distributed throughout India, where a greenish oil is extracted from the seeds and is used for burning by the poorer classes. It is also used as an application in rheumatism.

An analysis of Queensland-grown fruits follows: Shells, 62.5 per cent; kernels, 37.5 per cent; greenish yellow oil, 43 per cent; dry residue, 27 per cent; moisture, 30 per cent; ashes of whole kernels, 1.66 per cent; ashes of exhausted residue, 6.15 per cent. The green oil on saponification yields a

bright-yellow soap, the green pigment of the oil having been changed into a bright yellow. This oil is bitter and aromatic; its specific gravity is 0.942; and it solidifies at +5°.

The strong, durable reddish wood is useful for the joiner and cabinetmaker; in India it is used for masts, spars, railway sleepers, machinery, etc. The weight is 63 pounds per cubic foot. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 284, 390.*)

For previous introduction, see S. P. I. No. 38118.

52596 and 52597.

From Santiago, Chile. Seeds presented by F. Albert, consulting forester, Forestry Department, through the United States Forest Service. Received March 5, 1921.

52596. PHILESIA MAGELLANICA Gmel. Liliaceæ.

A shrub 3 to 4 feet high, bearing pendulous bright-red flowers. It is native to South America from Chile to the Straits of Magellan. It is said to be remarkably strong in withstanding the effects of a deleterious atmosphere, for it grows well in the noxious fumes of the copper-smelting works in Chile. It is hardy in favored districts of Britain south of the Thames. It requires a light peaty soil. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 55, p. 398.*)

For previous introduction, see S. P. I. No. 31744.

52597. TRICONDYLUS OBLIQUA (Ruiz and Pav.) Kuntze. Proteaceæ.
(*Lomatia obliqua* R. Br.) **Radal.**

An evergreen tree up to 35 feet in height, with somewhat grooved branches, alternate leathery leaves with shining upper surfaces, and axillary racemes of white flowers. The leaves are fragrant, reminding one of the European walnut; an infusion of the bark has purgative properties utilized in medicine. Native to Chile. (Adapted from *Castillo and Dey, Jeografía Vejetal del Río Valdivia, p. 41.*)

For previous introduction, see S. P. I. No. 49278.

52598. FICUS CARICA L. Moraceæ. Fig.

From Palermo, Italy. Cuttings purchased through Louis G. Dreyfus, jr., American consul. Received March 8, 1921.

Cuttings of a fig growing in the orchard of Agostino Lamonica, Casteldaceia Italia, Palermo, about 12 miles from the city of Palermo. The fruit is said to be the size of a saucer.

52599. CASSIA OCCIDENTALIS L. Cæsalpiniaceæ.

From Bahia, Brazil. Seeds presented by H. M. Curran. Received March 11, 1921.

"Seeds of this plant, ground after washing, make a fair coffee substitute which is in common use among the poor people of South American countries from Colombia to Brazil. The plant is a rapid-growing coarse annual weed, bearing great quantities of seed." (*Curran.*)

52600. SORBUS TRILOBATA (Labill.) Heynh. Malaceæ.
(*Pyrus trilobata* DC.)

From Paris, France. Cuttings presented by Prof. Georges Poirault, Université de Paris, École Supérieure de Pharmacie. Received March 11, 1921.

"Cuttings of a tree growing at the Villa Thuret (but originally from Syria), which is a rather rare but very interesting ornamental, being covered in the spring with large white flowers, and in the autumn maturing fruits which make excellent preserves. A Syrian friend of mine tells me that in his country this tree is very popular." (*Poirault.*)

52601. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Prague, Bohemia. Seeds presented by Grunhut & Fanta. Received March 17, 1921.

Bohemian red clover introduced for experimental purposes.

52602. BRASSICA OLERACEA BOTRYTIS L. Brassicaceæ. **Cauliflower.**

From Lugano, Switzerland. Seeds presented by F. Dammann, seed specialist. Received March 11, 1921.

"Cauliflower *Primus*, the finest Italian cauliflower, introduced by my firm to the trade in 1897. *Primus* is grown by market gardeners in almost every European country." (*Dammann.*)

52603. RHODODENDRON RACEMOSUM Franch. Ericaceæ.

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Gardens. Received February 24, 1921.

"A very desirable species discovered by Delavay in Yunnan, China, at an altitude of about 9,000 feet. It has small pink sweet-scented flowers which are produced when the plants are still small enough to be handled in pots. It is said to be perfectly hardy in England." (*F. V. Coville.*)

52604. AMYGDALUS DAVIDIANA (Carr.) Zabel. Amygdalaceæ.
(*Prunus davidiana* Franch.)

From Nanking, Kiangsu, China. Seeds purchased through J. H. Reisner, from the College of Agriculture and Forestry, University of Nanking. Received March 3, 1921.

Introduced for experimental purposes.

52605. POPULUS ALBA SUBINTEGERRIMA Lange. Salicaceæ. **Poplar.**

From Algiers, Algeria. Cuttings presented by Dr. L. Trabut. Received March 9, 1921.

A tree native to Lower California, which grows to a height of 80 or 90 feet, with a stout trunk 3 feet through, covered with rough ash-colored bark, and with ascending branches. The silky pubescent and ovate leaves are 3 inches long. The tree grows on the high mountains of the interior of the Cape region of Lower California, and along streams which it often follows well down toward the warm lowlands. The leaves and flowers appear in February; in October all are fallen, an unusual condition in Lower California where most of the vegetation comes forward with the summer and fall rains. The light reddish wood of this tree is used for making furniture. The wood much resembles cherry in color, is close grained, moderately hard, and shows a handsome satiny surface. It appears well suited for the interior finish of houses or for the better classes of cabinetwork. It is therefore desirable that this tree should be tested for timber in countries with a temperate climate. Since it grows at a considerable elevation above the sea, where the temperature sometimes falls below the freezing point, the tree might be expected to thrive in Southern California and in all the Mediterranean basin. (Adapted from *Garden and Forest, vol. 4, p. 330.*)

52606. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Johannesburg, Transvaal, Union of South Africa. Seeds presented by J. Burtt Davy, Agricultural Supply Association. Received March 11, 1921.

White kafir introduced for comparison with American-grown seeds.

52607 to 52617.

From Ambato, Ecuador. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received March 11, 1921. Quoted notes by Mr. Popenoe.

52607. DATURA SANGUINEA Ruiz and Pav. Solanaceæ.

"(No. 570b. Ambato, Ecuador. January 14, 1921.) Two seed pods from the common red-flowered arborescent Datura cultivated in the vicinity of Ambato, altitude about 8,500 feet."

52608 and 52609. DELOSTOMA ROSEUM (Karst. and Tr.) Schum. Bignoniaceæ.

52608. "(No. 566a. Quinta Normal, Ambato. January 22, 1921.) *Cholán.* A small tree, native to certain regions of Ecuador and occasionally cultivated in parks and gardens. It is rather susceptible to frost, but will probably withstand the winters of southern California and southern Florida. Its lilac-colored flowers resemble those of the catalpa in form and size."

52609. "(No. 567a. Quinta Normal, Ambato. January 22, 1921.) *Cholán.* This plant differs from 566a (S. P. I. No. 52608), principally in the color of the flowers, which are pale lilac. It also seems to be a trifle less frost resistant than the latter. For trial in California and Florida."

52610. DURANTA TRIACANTHA Juss. Verbenaceæ.

"(No. 562a. Ambato, Ecuador. January 22, 1921.) *Chivo.*"

For previous introduction, see S. P. I. No. 52575.

52611. JUGLANS sp. Juglandaceæ. **Walnut.**

"(No. 571a. Quito, Ecuador. January 29, 1921.) *Tocte.* There are probably two species of Juglans in Ecuador which go under this name; one of them is *Juglans peruviana,* the other as yet undescribed. Both are found in the highlands between altitudes of 6,000 and 10,000 feet; one or the other is abundant in nearly every town of the sierra. The tree is sometimes called *nogal,* as well as *tocte;* the fruit is always known by the latter name.

"Luis Cordero (Enumeración Botánica) says of this tree in the Province of Azuay, 'It is most useful, since it furnishes, aside from its grateful fruit and its fine, solid, and beautiful wood, a tonic of probable efficiency obtained from boiling the leaves.' The plant is much used by the Indians of Imbabura Province in the preparation of dyes.

"The *tocte* is abundant at Ambato. It can scarcely be termed a cultivated species in this region, since it is not commonly planted; but trees which spring up around cultivated fields and in dooryards are allowed to grow unmolested, and the fruit is utilized in a small way. The plant strongly resembles *J. nigra,* but the foliage is perhaps larger. The nuts are an inch and a half in diameter, with a very thick bony shell deeply

52607 to 52617—Continued.

corrugated on the surface, and a kernel of mild, pleasant flavor. Recently the species has been utilized in Ambato as a stock plant on which to graft *J. regia*.

"In Ibarra the *tocte* is very abundant, and the nuts are commonly sold in the market. They are used to prepare a famous sweetmeat, the nogada of Ibarra, made from brown or white sugar, milk, and walnut meats. At Otavalo the tree is quite abundant, as also in the southern part of Ecuador at Loja and Cuenca. The two species which go under this name are very similar in character."

For an illustration of the tocte, see Plate II.

52612. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

"(No. 563a. Ambato, Ecuador. January 21, 1921.) Seed purchased in the market of Ambato, near which town it was produced, at an altitude of 8,600 feet. This is the common alfalfa of the Ecuadorian highlands, forwarded for trial in comparison with North American varieties. It is cultivated in a region of little rainfall and on a very light, loose sandy soil."

52613. TACSONIA TRIPARTITA Juss. Passifloraceæ.

"(No. 561a. Ambato, Ecuador. January 24, 1921.) *Tacso.* This species is quite distinct in habit from *Tacsonia mollissima;* the plant is a slender climber, reaching to 15 or 20 feet. The leaves are deeply 3-lobed, with the lobes narrow; the flowers are light pink, 3 inches broad. The fruits are oblong, tapering slightly toward the stem, about 3 inches in length, and orange-yellow. In flavor they are quite similar to those of *T. mollissima.* For trial in California and Florida."

52614. PRUNUS SEROTINA Ehrh. Amygdalaceæ. **Capulin.**

"(No. 564a. Ambato, Ecuador. January 24, 1921.) *Capulí.* Seeds of the large-fruited variety of which scions have been sent."

For previous introduction, see S. P. I. No. 52579.

52615. PRUNUS CERASIFERA MYROBALANA (L.) C. Schneid. Amygdalaceæ. **Plum.**

"(No. 565a. Ambato, Ecuador. January 22, 1921.) *Mirabel.* Seeds obtained from fruits purchased in the market of Ambato. For trial as a stock plant."

For previous introduction, see S. P. I. No. 52580.

52616. ZEA MAYS L. Poaceæ. **Corn.**

"(No. 560a. Ambato, Ecuador. January 12, 1921.) *Maiz negro* (black corn). A peculiar variety of corn, obtained in the market of Ambato. The ears are 3 to 6 inches long, tapering toward the apex, and the kernels large, starchy, and purplish black."

52617. ASTRAGALUS sp. Fabaceæ.

"(No. 568a. Ambato, Ecuador. January 22, 1921.) An attractive shrub common on dry hillsides about Ambato (8,500 feet), whence this seed. It sometimes reaches to 6 feet in height; its compound pinnate leaves are 3 to 5 inches long, and its lilac-purple pea-shaped flowers, borne in small clusters, are about half an inch broad. The plant will probably succeed in California and Florida, where it should be tested as an ornamental."

52618. HORDEUM DISTICHON PALMELLA Harlan. Poaceæ. **Barley.**

From Ayr, Scotland. Seeds presented by McGill & Smith (Ltd.). Received March 11, 1921.

"Sample of a new barley for which our name is *Golden Pheasant*. It is a cross between the best brewing barley in Britain and the best brewing barley in Germany." (*J. F. McGill.*)

52619. ACACIA TORTILIS (Forsk.) Hayne. Mimosaceæ.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received March 21, 1921.

A tree abundant in many parts of tropical Africa and Arabia, with brown or reddish brown extremities and straight spines 2.5 centimeters long on the barren branches and very short, slightly recurved spines on the flowering branches. The linear-oblong leaflets are 2 to 7 millimeters long. The capitate flowers are in clusters of as many as five in the leaf axils. The flat, spirally twisted linear pod is 6 to 12 centimeters long. (Adapted from *Muschler, Manual Flora of Egypt, vol. 1, p. 461.*)

52620. CARICA PAPAYA L. Papayaceæ. **Papaya.**

From Honolulu, Hawaii. Seeds presented by J. M. Westgate, Agronomist in Charge, Agricultural Experiment Station. Received March 21, 1921.

"This variety of papaya which has been under cultivation through four generations has transmitted its characteristic flavor and texture and, to a reasonable degree, its shape to all of the seedlings of its kind that have come under observation. To this variety has been given the name *Solo*. The fruits are quite small, in many instances being only large enough for one serving. Most plants of the variety are hermaphrodite or bisexual, but a staminate tree is found occasionally. Although the fruits are small, they are crowded into the axil of nearly all the leaves and are so numerous that the yield is reasonably heavy, yet not equaling in total weight that of some of the large kinds. The fruit is pyriform, somewhat irregular, colors well and uniformly before softening, and is free from the diseased spots which occur on the surface and penetrate the pulp of many of the large forms. The flesh is of medium thickness, of bright-yellow color, smooth, tender almost to melting, and of delicious flavor even near the stem end, where many papayas lack flavor. The seeds, which are abundant, permit ready and rapid means of propagation, and, because of the loose placenta or inner lining of the fruit to which the seeds are attached, they are very easily removed when the fruit is prepared for serving. From the standpoint of the home gardener, the *Solo* is considered one of the best of the papayas that have been grown at the experiment station, for, although small, its qualities of texture and flavor give it first rank." (*Report of the Hawaii Agricultural Experiment Station, 1919, p. 28.*)

52621. RHODODENDRON RACEMOSUM Franch. Ericaceæ.

From Edinburgh, Scotland. Seeds presented by Dr. Isaac Bailey Balfour, director, Royal Botanic Gardens. Received March 19, 1921

"The amount of pink color in the flower of this species varies enormously. We have them from pure white to forms which are pink throughout. It resembles in that respect your *Rhododendron vaseyi*." (*Balfour.*)

52622 to 52661.

From Elstree, Herts, England. Plants presented by Hon. Vicary Gibbs. Received March 7, 1921. Quoted notes by Mr. Gibbs.

52622. ABIES FAXONIANA Rehd. and Wils. Pinaceæ. **Fir.**

A tree 20 to 40 meters high, with obscurely gray fissured bark and horizontal branches; the common species in northwest Szechwan, where it forms extensive forests. The tree is characterized by the short, broadly ovoid scales of its very resinous winter buds, its ferruginous villose shoots, rather short flat leaves, and by its violet-purple, oblong, densely resinous cones, 6 to 7 centimeters long. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 42.*)

52623. ABIES SIBIRICA NEPHROLEPIS Trautv. Pinaceæ. **Fir.**

A variety which differs from *Abies sibirica* in its kidney-shaped scales that are almost three times as broad as long and somewhat exceed the bracts. Native to Amur, Siberia. (Adapted from *Maximowicz, Primitiae Florae Amurensis, p. 260.*)

For description of *A. sibirica*, see S. P. I. No. 42311.

52624. ABIES RECURVATA Masters. Pinaceæ. **Fir.**

A very remarkable species, unlike any other in its strongly decurved but assurgent leaves. It is a very local species forming entire forests in the Min Valley south of Sungpan. The tree reaches a height of 80 feet and has reddish brown bark. The leaves are deep green or very glaucous, varying very much in this respect. The small erect brown cones are borne in clusters at the ends of the branches and near the tops of the trees. The timber is hard, resinous, and highly valued for building purposes. (Adapted from *Journal of the Linnean Society, vol. 37, p. 423.*)

52625. AESCULUS INDICA (Royle) Hook. Æsculaceæ.

A tree 100 feet high, found at altitudes of 8,000 to 10,000 feet in northern India, and flowering the latter part of June when the other horse-chestnuts have finished. The luxuriant foliage is shining green; and the dainty white flowers, which are borne in fairly dense racemes, have the two small upper petals heavily blotched with yellow changing to orange-red and the lower petals tinged with pink. (Adapted from *The Garden, vol. 76, p. 376*, and from *Gardening Illustrated, vol. 39, p. 405.*)

52626. BERBERIS sp. Berberidaceæ. **Barberry.**

"*Wisley seedlings.*"

52627. BERBERIS sp. Berberidaceæ. **Barberry.**

"*Forrest No. 13208.*"

52628. BERBERIS sp. Berberidaceæ. **Barberry.**

"*Forrest No. 13224.*"

52629. CARAGANA BOISI C. Schneid. Fabaceæ.

A variety with beautiful persistent foliage.

For further description, see S. P. I. No. 52452.

52630. CLEMATIS MONTANA RUBENS Wilson. Ranunculaceæ.

A splendid spring-flowering climber which will grow almost anywhere. It is perfectly hardy and a very free grower, ascending 15 feet in one season. The profuse flowers are 2 to 3 inches across and soft rosy red. (Adapted from *Gauntlett, Hardy Plants Worth Growing, No. 92, p. 22.*)

52622 to 52661—Continued.

52631. CLEMATIS TANGUTICA (Maxim.) Korsh. Ranunculaceæ.

A superb species 10 to 16 feet high, closely related to *Clematis orientalis*, with foliage equally glaucous, flowering in July with large bright-yellow, very abundant flowers with long-pointed petals. The fruit forms silvery plumelike, very decorative tassels. (Adapted from *Vilmorin-Andrieux, Plantes Vivace et a Massifs, 1921, p. 29.*)

52632 to 52639. COTONEASTER spp. Malaceæ.

52632. "*Farrer 403.*"
52633. "*Forrest 33.*"
52634. "*Forrest 5567.*"
52635. "*Forrest A553.*"
52636. "*Forrest 14864.*"
52637. "*Forrest 14948.*"
52638. "*Forrest 14976.*"
52639. "*Forrest 16031.*"

52640. DEUTZIA SCHNEIDERIANA LAXIFLORA Rehder. Hydrangeaceæ.

A shrub 1 to 2 meters high with fuscous-purple branches and somewhat papery, elliptic, stellately hairy leaves, shining or white beneath. The flower clusters are broadly paniculate, 3 to 6 centimeters long. The oblong petals are about 10 millimeters long, stellately hairy on the outer surface. The stamens, often longer than the petals, are dilated and toothed at the tip, the teeth scarcely touching the anther. The three graceful styles are about as long as the stamens. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 7.*)

For previous introduction, see S. P. I. No. 40580.

52641. DEUTZIA sp. Hydrangeaceæ.

"*Forrest No. 15631.*"

52642. DEUTZIA sp. Hydrangeaceæ.

"*Farrer No. 109.*"

52643. FORSYTHIA sp. Oleaceæ.

"Sport."

52644. ILEX FARGESII Franch. Aquifoliaceæ.

A glabrous species with black bark and thick, spreading leaves 10 to 15 centimeters long, linear-lanceolate or narrowly oblong, the lower entire and the upper remotely denticulate. The flowers are crowded in globose cymes on pedicels 5 to 6 millimeters long, and the spreading petals are 5 millimeters long. The globose drupes are in clusters of three to four in the axils of the leaves. Native to Szechwan, western China. (Adapted from *Journal de Botanique, vol. 12, p. 255.*)

52645 and 52646. LAVANDULA SPICA L. Menthaceæ. **Lavender.**

52645. "Variety *Nana Glasnevin.*"

52646. "Variety *Twickel Purple.*"

52647. MALUS SYLVESTRIS Mill. Malaceæ. **Apple.**
(*Pyrus malus* L.)

"Variety *aldenhamensis.* A rooted sucker of the original tree."

52648. PAEONIA LUTEA Delavay. Ranunculaceæ. **Peony.**

One of the most beautiful of the yellow species, found in Yunnan in 1892. It is a hardy species and is a choice plant for garden effect. The clear-yellow flowers are about 3½ inches in diameter. (Adapted from *The Garden, vol. 61, p. 267,* and *vol. 76, p. 416.*)

52622 to 52661—Continued.

52649 to 52657. PHILADELPHUS LEMOINEI Lemoine. Hydrangeaceæ.

52649. *"Avalanche."* **Mock orange.**

A most graceful shrub 5 to 6 feet high, with whiplike slender branches mostly erect. It has smallish lanceolate leaves, and the parentage of *Philadelphus microphyllus* can be readily detected. The handsome single fragrant flowers, in numerous small clusters, open about June 26. (Adapted from *Garden Magazine, vol. 29, p. 198.*)

52650. *"Bannierii."*

A remarkably showy form which blossoms about June 20; the long stout branches bear numerous clusters of three to four large pure-white semidouble flowers over 2 inches across. (Adapted from *Garden Magazine, vol. 29, p. 198.*)

52651. *"Bouquet blanc."*

A new variety of medium height, with pure-white flowers 1 inch across, in big clusters along the branches, bending them down with their weight.

52652. *"Boule d'Argent."*

A dwarf variety with large white double flowers, which are very fragrant.

52653. *"Candelabra."*

A variety 2 feet high, with large white flowers entirely covering the branches.

52654. *"Erectus."*

A new, very beautiful floriferous variety.

52655. *"Manteau d'Hermine."*

A small neat shrub which does not grow more than 2 to 2½ feet in 10 or 12 years. The branches have a spreading habit and bear small leaves which show strongly the characteristics of *Philadelphus microphyllus*. The double to semidouble pure-white flowers are borne in great profusion from all the stems about June 13.

52656. *"Mont Blanc."*

A free-branching, excellent garden shrub 5 feet high, with slender ascending stems. It bears profusely a wealth of pure-white fragrant blossoms about June 13.

52657. *"Oeil de pourpre."*

A variety with a purple disk.

52658. PICEA JEZOENSIS (Sieb. and Zucc.) Carr. Pinaceæ. **Spruce.**

A very beautiful hardy flat-leaved spruce 70 feet high, with branches spreading on the ground, a dense pyramidal habit, and beautiful orange-crimson staminate flowers. The leaves are silvery on the upper surface and rich green on the lower. This is the most widely distributed of the species of eastern Asia, ranging from the Amur region to Manchuria, Chosen, and northern and central Japan. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 3, p. 52,* and from *National Nurseryman, vol. 24, p. 420.*)

For previous introduction, see S. P. I. No. 20318.

52622 to 52661—Continued.

52659. PICEA SCHRENKIANA Fisch. and Mey. Pinaceæ. **Spruce.**

A large tree attaining a height of 100 feet, with ashy gray branchlets and large ovoid light-brown buds. The straight or curved rigid leaves are up to 1¼ inches long. The cylindric dark shining-brown cones are 3 to 4 inches long and 1 inch in diameter. This species forms large forests in Turkestan, north of 41° at 4,500 to 10,000 feet altitude, and extends eastward through Chinese territory along the Tianshan Mountains. (Adapted from *Clinton-Baker, Illustrations of Conifers, vol. 2, p. 48.*)

52660. RUBUS sp. Rosaceæ.
"Forrest No. 15329."

52661. RUBUS sp. Rosaceæ.
"Forrest No. 15334."

52662 and 52663.

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received February 28, 1921, at the Plant Introduction Garden, Chico, Calif.

52662. AMYGDALUS DAVIDIANA (Carr.) Zabel. Amygdalaceæ.
(*Prunus davidiana* Franch.)

For use as stock.
For previous introduction, see S. P. I. No. 46694.

52663. PRUNUS SERRULATA Lindl. Amygdalaceæ. **Flowering cherry.**

Introduced for experimental purposes.

52664 and 52665. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Coimbatore, India. Seeds presented by U. Vittal-Rao, Experiment Station, Agricultural College. Received March 17, 1921. Quoted notes by Mr. Vittal-Rao.

52664. *"J 213."*

52665. *"Kassoer."*

52666. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Sydney, New South Wales, Australia. Seeds presented by George Valder, director, Department of Agriculture. Received March 24, 1921.

"*Timothy* grass from Glen Innes Experiment Farm. This seed is from what is described as the best growth of timothy grass ever obtained at Glen Innes. The plants reached a height of over 2 feet and were characterized by exceptionally long seed heads." (*Valder.*)

52667. MALUS SYLVESTRIS Mill. Malaceæ. **Apple.**
(*Pyrus malus* L.)

From Platenice, Bohemia. Cuttings presented by Dr. Rudolph Kuráž, agricultural attaché, Czechoslovak Legation, Washington, D. C., through Dr. Ales Hrdlicka, curator, Division of Physical Anthropology, United States National Museum. Received March 21, 1921.

"These cuttings came from Platenice, in Bohemia, which lies about 200 meters above sea level. I assure you that they are from the very best source." (*Kuráž.*)

52668. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

From Honolulu, Hawaii. Plants and cuttings presented by Willis T. Pope, Horticulturist, Agricultural Experiment Station. Received March 17, 1921.

"*Pirie.* This variety is considered the best, at least for lowland conditions, of all the mangos that have been introduced into Hawaii. It is of medium size, inclining to the rounded form, with a distinct beak at the stigmatic point. The surface is smooth and when ripe is a pale yellow, beautifully marked with crimson where exposed to the sun. It is practically fiber-free, has a delightful aroma, and is as soft and juicy as a ripe peach. The seed is easily removed, so that the fruit can be served in halves and eaten with a spoon without the slightest inconvenience. In order to remove the seed, it is only necessary to make a cut circling the fruit, about midway its length, and extending as deep as the surface of the seed. Then, by a slight twisting motion, one-half of the fruit can be separated from the seed, leaving a smooth unbroken surface within. By cutting very slightly around the seed, it may easily be removed from the remaining half of the mango. The flavor is so unusually delicious as to put this mango in a class of its own in Hawaii. The *Pirie* is less subject than other varietes to the black spots caused by the fungus *Colletotrichum glocosporioides* and, while not immune to the fruit-fly attacks, it either possesses a high degree of resistance or is not a preferred variety for the fly. No injured fruits were found on this variety in the station orchards this season, though crops of several of the other varieties were rendered almost worthless." (*Westgate, Report of the Hawaii Agricultural Experiment Station, 1919, p. 23.*)

52669 to 52689.

From Paris, France. Plants presented by Vilmorin-Andrieux & Co. Received February 21, 1921.

52669. ARALIA CACHEMIRICA Decaisne. Araliaceæ.

An unarmed herb 5 to 8 feet high, with quinately compound leaves; the 5 to 9 oblong-ovate leaflets, 4 to 8 inches long, are doubly serrate and glabrous or bristly on the veins beneath. Native to the Himalayas.

For previous introduction, see S. P. I. No. 30285.

52670. ARUNDINARIA AURICOMA Mitf. Poaceæ. **Bamboo.**

One of the most beautiful of the lesser bamboos. It forms a graceful sheaf of slender stems 2 to 3 feet high, well clothed with a peculiarly velvety foliage in gold and green. It appears to be quite hardy in most places and affords a glorious break of delicate color in shrubbery, woodland, or a large rock garden. At all seasons it is attractive without being aggressive and, as it never runs underground to any extent, may be planted anywhere. (Adapted from *The Garden, vol. 83, p. 271.*)

52671. ARUNDINARIA FASTUOSA (Marl.) Makino. Poaceæ. **Bamboo.**

The loftiest and stateliest of the hardy bamboos, this is superior to and different from *Arundinaria simoni* in the early fall of the stem-sheaths, in the short, crowded branches at each joint which give to each stem-growth a columnar appearance, and in the more tufted habit. It is only rarely that underground suckers appear any distance away from the parent clump, whereas in *A. simoni* they are rampant. The dark-green hollow stems, up to 22 feet high, are perfectly erect and round, except at the upper internodes which are flattened on one side. The

52669 to 52689—Continued.

branches are short and very leafy. The leaves, 4 to 8 inches long, are dark lustrous green above, glaucous on one side of the midrib beneath and greenish on the other. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 215.*)

For previous introduction, see S. P. I. No. 42652.

52672. ARUNDINARIA FORTUNEI (Van Houtte) A. and C. Rivière. Poaceæ. **Bamboo.**

A silver-variegated bamboo, from 2 to 7 feet high, a very hardy and free grower. The leaves, 5 inches long, are beautifully striated with white. (Adapted from *Gauntlett, Hardy Plants Worth Growing, No. 92, p. 285.*)

52673. ARUNDINARIA PUMILA Mitf. Poaceæ. **Bamboo.**

A very pretty and ornamental little dwarf bamboo. At first one might be tempted to confound this species with *Arundinaria humilis*, but closer observation leads to the conviction that it is quite a distinct species. It is not so tall, the bright-green leaves are darker, shorter, and narrower, and do not taper so gradually to a point as those of *A. humilis*. The tessellation is closer, the teeth of the serrated edges are if anything less conspicuous, and the nodes are less well defined and far less downy; but, on the other hand, they have a waxy bloom not to be found in *A. humilis*. The stem is much more slender and more entirely purple, except quite at the base. The culms are about 15 inches high, round, hollow, very slender, and about three-eighths of an inch in circumference, slightly flattened at the top. The internode is about 2½ inches long. The culms are not much branched. The leaves are about 5 inches long and up to three-fourths of an inch in breadth, rounded at the base, petiolated, and ending rather suddenly in a fine point. They are rather rough to the touch on both surfaces. This brilliant little plant is quite hardy and is a very effective ornament for some rocky nook where, as it does not seem much inclined to run at the roots, it may better be kept within bounds than some of its family. (Adapted from *Mitford, The Bamboo Garden, p. 98.*)

For previous introduction, see S. P. I. No. 41924.

52674. ARUNDINARIA PYGMAEA (Miquel) Kurz. Poaceæ. **Bamboo.**

A subshrub 6 inches in height, with solid branching culms and dense foliage. The leaves are 1 to 1½ inches long, rounded at the base, with rough, somewhat hairy margins, bright green above and whitish pubescent beneath. Native to Japan. (Adapted from *Miquel, Annales Musei Botanici Lugduno-Batavi, vol. 2, p. 286.*)

For previous introduction, see S. P. I. No. 42653.

52675. BUDDLEIA DAVIDII Franch. Loganiaceæ.
(*B. variabilis* Hemsl.)

"Variety *prostrata*." (*Vilmorin-Andrieux.*)

A more or less prostrate, low-branching form with lanceolate, relatively small leaves and pale flowers. Native to Hupeh, China. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 846.*)

52676. CLEMATIS BUCHANIANA DC. Ranunculaceæ. **Clematis.**

A very vigorous Himalayan species which will cover a large wall space with buoyant hairy leaves and is covered in September with cymes of

52669 to 52689—Continued.

pendent whitish yellow flowers which exhale a delicate perfume. (Adapted from *Vilmorin-Andrieux, Plantes Vivaces et a Massifs, 1921, p. 28.*)

52677. COTONEASTER DAMMERI RADICANS C. Schneid. Malaceæ.

This variety differs from the typical form in its long peduncles and constantly one or two flowered racemes. The fruit is globose and bright scarlet, and the normal habit of the plant prostrate and rooting. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 176.*)

For previous introduction, see S. P. I. No. 40574.

52678. DEUTZIA DISCOLOR Hemsl. Hydrangeaceæ.

"Variety *major*." (*Vilmorin-Andrieux.*)

A luxuriantly spreading shrub with branches so heavily laden with flowers that the tips bend over and trail the ground. The white flowers, larger than in the type, are sometimes slightly suffused with rose. (Adapted from *Gardening Illustrated, vol. 30, p. 307.*)

52679. FRAGARIA DALTONIANA J. Gay. Rosaceæ.

Himalayan strawberry.

A perennial stoloniferous plant with slightly hairy petioles 2 to 3 inches long and elliptic to obovate-elliptic membranous leaflets up to 1 inch long, covered with sparse white rigid hairs. The solitary one-flowered scape is a little shorter than the leaves. The oblong, cylindric glabrous fruit is about half an inch long. Native to alpine pastures in the Sikkim-Himalayas, at altitudes of 10,000 to 15,000 feet. (Adapted from *Journal of the Asiatic Society of Bengal, vol. 44, pt. 2, p. 206.*)

For previous introduction see S. P. I. No, 48286.

52680. FRAGARIA NILGERRENSIS Schlecht. Rosaceæ.

Nilghiri strawberry.

This vigorous and hardy strawberry was introduced from China under the direction of M. Maurice de Vilmorin and is remarkable for its tufted habit, hairy foliage, its small white flowers, and especially for its small, insipid, white, hairy fruits. (Adapted from *Journal Société Nationale d'Horticulture, vol. 21, p. 189.*)

For previous introduction, see S. P. I. No. 51616,

52681. JUGLANS INTERMEDIA VILMOREANA Carr. Juglandaceæ. **Walnut.**

A tree 80 feet high, possibly a hybrid between the European and American black walnut, with branches more upright than those of the European walnut, grayish bark, and bronze-colored young shoots. The buds are inclosed in fleshy, hairy scales. The fruit is intermediate between that of the two parents. The slightly coriaceous smooth dark-green ovate leaflets remain on the branches until killed by frost. The fruit is not produced every year, and never in large quantities; it is smooth and the nut is more deeply furrowed than that of the European species. The seed germinates well and produces plants resembling the parent. (Adapted from *Garden and Forest, vol. 4, p. 52.*)

For previous introduction see S. P. I. No. 22525.

52682. JUGLANS sp. Juglandaceæ. **Walnut.**

A new species of walnut.

52683. JUGLANS sp. Juglandaceæ. **Walnut.**

"No. 6164. M. V." (*Vilmorin-Andrieux.*)

52669 to 52689—Continued.

52684. MALUS SIKKIMENSIS (Hook. f.) Koehne. Malaceæ. **Crab apple.**
(*Pyrus sikkimensis* Hook. f.)

A wild crab-apple tree, common in Sikkim, which bears fruit only pleasantly edible when stewed with sugar. (Adapted from *Records of the Botanical Survey, India, vol. 1, No. 2, p. 11.*)

For previous introduction, see S. P. I. No. 33057.

52685. OSMANTHUS DELAVAYI Baill. Oleaceæ.

A beautiful evergreen shrub from southwestern China, with dense axillary clusters of pure-white flowers. The dark-green ovate leaves are an inch long and have serrate margins. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 55, p. 257.*)

For previous introduction, see S. P. I. No. 48332.

52686. PHYLLOSTACHYS FLEXUOSA A. and C. Rivière. Poaceæ. **Bamboo.**

A graceful bamboo 8 to 10 feet high, with tall, slender, slightly zigzag canes changing from green to bright yellow. The dark-green, rather small leaves are bent. The plant has a most graceful aspect, the lithe branches being swayed by the gentlest breeze. One of the hardiest of the bamboos, this species is quite distinct. (Adapted from *Gauntlett, Hardy Plants Worth Growing, No. 92, p. 294.*)

52687. PYRACANTHA CRENULATA (Don) Roemer. Malaceæ.
(*Crataegus crenulata* Roxb.)

"A shrub of medium small dimensions, closely allied to *Crataegus pyracantha* (*Pyrancantha coccinea*) having small glistening green leaves and bearing a multitude of bright-red berries. Found on stony places at altitudes of 3,000 to 5,000 feet. It is of value as a very ornamental rockery shrub for those sections of the United States where the temperature is never very low." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 40737.

52688. PYRUS sp. Malaceæ.

"*Mandchouriea.*" (*Vilmorin-Andrieux.*)

52689. VIBURNUM SIEBOLDII Miquel. Caprifoliaceæ.

A wide-spreading shrub from Japan, sometimes reaching a height of 10 to 15 feet. If the leaves are bruised or crushed in the hand, the odor is anything but agreeable, but otherwise it is not noticeable. The flowers, in large flat clusters, are cream colored or almost white and borne in moderate-sized heads during June. In August the fruit clusters assume a rich crimson color and are very conspicuous and ornamental, but in September they turn black and soon drop. (Adapted from *Gardening Illustrated, vol. 39, p. 405.*)

52690 to 52700. CARAGANA spp. Fabaceæ.

From Paris, France. Cuttings presented by Vilmorin-Andrieux & Co. Received February 21, 1921.

52690. CARAGANA ARBORESCENS Lam. **Siberian pea tree.**

"Variety *nana*." (*Vilmorin-Andrieux & Co.*)

A quaint-looking dwarf shrub with stiff contorted branches which grow slowly. It is usually grafted on the type, from which it does not differ in leaf or flower. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 288.*)

52690 to 52700—Continued.

52691. CARAGANA ARBORESCENS Lam. **Siberian pea tree.**

"Variety *sophoraefolia*." (*Vilmorin-Andrieux & Co.*)

A form of *Caragana arborescens* with extremely small leaflets. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 95.*)

For previous introduction, see S. P. I. No. 52451.

52692. CARAGANA ARBORESCENS CUNEIFOLIA (Dipp.) C. Schneid. **Siberian pea tree.**

A small form of *Caragana arborescens* with truly cuneate leaves. (Adapted from *Schneider, Illustriertes Handbuch der Laubholdzkunde, vol. 2, p. 95.*)

52693. CARAGANA FRUTEX (L.) Koch.

A handsome bushy shrub, native to Siberia and quite hardy in England, with smooth spreading branches and pinnate leaves with two pairs of leaflets which are very close to each other at the point of the petiole; the pale-green leaflets are obovate. The bright-yellow flowers, solitary or in pairs, are produced in the abortive shoots of the last year. The peduncles are long and slender, jointed, and smooth. (Adapted from *Sweet, British Flower Garden, vol. 3, p. 227.*)

52694. CARAGANA FRUTEX (L.) Koch.

"Variety *pygmaea*." (*Vilmorin-Andrieux & Co.*)

A dwarf form.

52695. CARAGANA FRUTEX (L.) Koch.

"Variety *sylvatica*." (*Vilmorin-Andrieux & Co.*)

52696. CARAGANA GRANDIFLORA DC.

A densely branching shrub with shining brown bark ornamented with white longitudinal streaks. The spiny stipules are reflexed and spreading; the paired spiny mucronate leaves, 4 to 7 centimeters long, are clustered at the tips of the branchlets. The ovate-oblong shining leaflets are cuneate at the base and 1 to 10 millimeters long. The yellow flowers, 6 to 10 millimeters long, are often solitary on peduncles 10 to 12 millimeters long. (Adapted from *Komarov, Acta Horti Petropolitani, vol. 29, p. 219.*)

For previous introduction, see S. P. I. No. 30546.

52697. CARAGANA MICROPHYLLA Lam.

"Variety *glomerata arenaria*." (*Vilmorin-Andrieux & Co.*)

A form of *Caragana microphylla*, variety *glomerata*, which has a rachis about 6 to 7 centimeters long and ovate or elliptic leaves about 2 to 6 centimeters long. (Adapted from *Komarov, Acta Horti Petropolitani, vol. 29, p. 350.*)

52698. CARAGANA PYGMAEA (L.) DC.

A handsome shrub with small leaves and yellow flowers, which grows spontaneously in hilly places in the southern provinces of Russia, especially about the River Tschargurban, also in great abundance in all the provinces south of Lake Baikal. In cultivation it rarely exceeds 4 feet, but in its wild state it is often 6 feet high with a stem 2 inches thick. The shoots when old are long and flexible, of bright-yellow color, and are

52690 to 52700—Continued.

made into flyflaps by the inhabitants of the country where it grows wild. The shoots are much tougher than those of any of our cultivated osiers and are better suited to be used for tying. The hard, dull-brown wood is streaked with red and is well adapted for veneering. (Adapted from *Edwards's Botanical Register, vol. 12, p. 1021.*)

For previous introduction, see S. P. I. No. 42282.

52699. CARAGANA SIBIRICA Medic.

A Siberian species of the ornamental Caraganas, shrubs grown chiefly for their bright-yellow flowers. The leaves are abruptly pinnate, with small entire leaflets. The pods are terete, linear, and straight.

52700. CARAGANA sp.

An unidentified form.

52701. LITCHI CHINENSIS Sonner. Sapindaceæ. Lychee.

(*Nephelium litchi* Cambess.)

From Zarfarwal, Punjab, India. Seeds presented by H. S. Nesbitt, American United Presbyterian Mission. Received January 25, 1921.

"This is counted a delicious fruit here, and the barky shell inclosing the sweet juicy pulp makes it easily transportable." (*Nesbit.*)

For previous introduction and description, see S. P. I. No. 51472.

52702 to 52714.

From Paris, France. Cuttings presented by Vilmorin-Andrieux & Co. Received February 21, 1921.

52702. CORNUS WALTERI Wangerin. Cornaceæ.

A tree 40 feet high, with white flowers and blue-black fruits, growing in woodlands at 900 to 2,000 feet altitude in western Hupeh, China. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 576.*)

For previous introduction, see S. P. I. No. 34566.

52703. HYDRANGEA sp. Hydrangeaceæ.

Received without description.

52704. LONICERA sp. Caprifoliaceæ.

Received without notes.

52705. × POPULUS RASUMOWSKIANA Schroed. Salicaceæ. Poplar.

A hybrid between *Populus nigra* and *P. suaveolens.* It is a large tree with roundish leaves smaller than in *P. petrovskoe.* The shoots are cylindrical. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 18, p. 108.*)

52706. RIBES CYNOSBATI L. Grossulariaceæ. Gooseberry.

A shrub about 6 feet high, native to eastern North America, with reddish purple fruits, scarcely half an inch in diameter and more or less covered with slender prickles. (Adapted from *Jacquin, Hortus Botanicus Vindobonensis, seu Plantarum Rariorum, pl. 123.*)

52707. RIBES LONGERACEMOSUM Franch. Grossulariaceæ. Currant.

"This species, found in the mountains of western China, bears large black fruits of good flavor in racemes a foot and a half long." (*E. H. Wilson, A Naturalist in Western China, vol. 2, p. 31.*)

For previous introduction, see S. P. I. No. 51617.

52702 to 52714—Continued.

52708. RIBES PETRAEUM Wulf. Grossulariaceæ. **Currant.**

Another of the red currant group widely spread in a state of nature in Europe and North Africa. It has no value as an ornamental shrub, its flowers being green suffused with purple, somewhat bell shaped, in horizontal or slightly nodding racemes 3 or 4 inches long. The leaves are more deeply lobed than in the common red currant, and the lobes are pointed. The fruit is roundish, flattened somewhat at the end, red, and very acid. (Adapted *from Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 409.*)

For previous introductions, see S. P. I. No. 40472.

52709. RIBES PETRAEUM CAUCASICUM (Bieb.) Jancz. Grossulariaceæ. **Currant.**

A shrub 1 to 3 meters high, with glabrous shoots and rounded leaves up to 13 centimeters broad and 12 centimeters long, ordinarily five lobed, the lobes little developed. The reddish flowers are in racemes up to 10 centimeters long. The receptacle is furnished with five tubercles below the petals, and the fruit is red or blackish purple. (Adapted from *Janczewski, Monographie des Groseilliers, p. 290.*)

For previous introduction, see S. P. I. No. 40426.

52710. RIBES USSURIENSE Jancz. Grossulariaceæ. **Currant.**

A much-branched shrub 1 millimeter high, producing rhizomes like those of *Ribes aureum;* the shrub has an odor resembling that of camphor. The glabrous leaves dotted below with yellow glands are 8 centimeters long and broad and three to five lobed. The loose arched racemes, 1 to 1½ centimeters long, bear five to nine whitish flowers briefly campanulate. The round fruit, as large as a currant, is black (greenish blue before ripening), not aromatic, and with greenish, slightly sweet acidulous flesh. The small ovoid seeds have a greenish gelatinous coating and an inflated funiculus. The fruit falls as soon as it is ripe and the seeds germinate in 22 to 50 days. The floral buds are very sensitive to winter cold. (Adapted from *Janczewski, Monographie des Groseilliers, p. 349.*)

For previous introduction, see S. P. I. No. 40488.

52711. RIBES VILMORINI Jancz. Grossulariaceæ. **Currant.**

A shrub 2 meters high, with glabrous branches which are red when young. The development and flowering are very slow; the small cordate leaves are 2 to 3 centimeters long and wide and are covered on the under surface with glandular hairs. The small greenish flowers are sometimes slightly tinged with brownish red and are in small clusters of two to eight. The small round black, glabrous fruit is capped with the flower, which does not dry up. The slightly sweetish flesh is pale or veined with purple-black. The fruit ripens in August and remains unchanged on the bush until October. Native to middle China, Tibet, and Yunnan. (Adapted from *Mémoires Société Physique et Histoire Naturelle, Geneve, vol. 35, p. 462.*)

52712. SPIRAEA MYRTILLOIDES Rehder. Rosaceæ. **Spirea.**

For previous introduction and description, see S. P. I. No. 52459.

52713. SYRINGA CHINENSIS Willd. Oleaceæ. **Lilac.**

A deciduous bush of dense rounded habit, 10 to 15 feet high, with flowers of the common lilac shade, intermediate in size between those

52702 to 52714—Continued.

of the common and Persian lilacs, and in somewhat loose clusters. The growths made during the summer produce the following May a pair of flower trusses 3 to 6 inches long at each joint toward the end, so that the whole makes a heavy arching, compound panicle. The seeds are fertile only occasionally. Native to China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 566.*)

Received as *Syringa correlata*, which is now referred to *S. chinensis*.

52714. VIBURNUM sp. Caprifoliaceæ.

Received without description.

52715 to 52735.

From Ambato, Ecuador. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received February 12, 1921. Quoted notes by Mr. Popenoe.

52715. BUNCHOSIA ARMENIACA (Cav.) DC. Malpighiaceæ.

"(No. 541a. Banos, near Ambato, Ecuador, 6,000 feet altitude. January 10, 1921.) *Ciruela verde* or *ciruela silvestre*. This species is considered to be indigenous in the Pastaza Valley below Banos. It is commonly cultivated in the latter town, and occasionally in the gardens of Ambato, but the climate of the latter region is slightly too cool for it. In Loja it is well known, as also in Otavalo and Ibarra. The plant attains about 15 feet in height and is quite attractive. The glossy deep-green leaves are elliptic-acuminate, 3 to 6 inches long, and rather leathery; the small yellow flowers are produced in short axillary racemes. The fruits are round or nearly so, 1 to 2 inches in diameter, and light green to yellowish green. Within the thin delicate skin is a mass of cream-colored, very sweet pulp in which one or two large seeds are embedded. The plant is probably too tender for any section of the United States except southern Florida."

52716. CARICA sp. Papayaceæ. Chamburo.

"(No. 546a. Ambato, Ecuador. January 12, 1921.) This plant is called *chilhuacan* in the gardens of Imbabura Province, where it is quite common; the same name is also used at Quito, where the species is fairly well known. In Tungurahua Province it is termed *chamburo*, while in the Azuay it is known as *siglalon*. In Loja it is more frequently seen as a wild than as a cultivated plant and is called *chamburo*. Its zone is approximately from 6,000 to 10,000 feet.

"The plant, which reaches a height of 15 to 20 feet, has a trunk somewhat stouter than that of the papaya and leaves which strongly resemble those of the latter in size and character. It is irregularly diœcious, at least when brought under cultivation. I have seen at Ambato plants bearing principally staminate flowers, but carrying at the same time a good number of fruits apparently normal in form and size. Many specimens produce pistillate flowers only, and some staminate only. The fruits, which are sold in the markets of numerous interandean towns, are elliptic, sharply pointed at the apex, and deeply five ribbed. By means of this latter characteristic they can easily be distinguished from those of the *higacho* (*Carica* sp., S. P. I No. 53758). They are deep orange when fully ripe, and possess a fragrance quite distinct from that of the papaya. The flesh is about half an inch in thickness; it is eaten usually after cooking in the form of a sweet conserve. The numerous

52715 to 52735—Continued.

seeds, resembling those of the papaya in size, are embedded in a gelatinous translucent pulp which fills the central cavity of the fruit and is sometimes eaten. The species is indigenous in the Andes of northern South America. In the vicinity of Bogota, Colombia, it is abundantly cultivated. It is probably sufficiently hardy to withstand the winters of southern California and southern Florida."

For an illustration of the chamburo, see Plate III.

52717. RUBUS GLAUCUS Benth. Rosaceæ. Andes berry.

"(No. 557a. Ambato, Ecuador. January 12, 1921.) *Mora de Castilla.* The Andean raspberry, the common dark maroon-fruited variety. This excellent fruit, native to the mountainous regions of Ecuador (as well as to several other tropical American countries) has received a certain amount of cultural attention at Ambato, Quito, Otavalo, and Ibarra, with the result that several varieties have originated. At Ambato there are two, the common sort with dark maroon-colored fruits and another with light-red fruits, somewhat more delicate in flavor than those of the common sort. The plant is half-climbing in habit and a vigorous grower. It covers arbors and fences, or can be trained into bush form, making a clump about 10 feet broad and high. The stems are round and covered with a thick whitish bloom; the leaves are trifoliolate, with the leaflets ovate-lanceolate, long-acuminate, serrate, about 3 inches in length, light green above and whitish below. The flowers are produced in terminal racemes sometimes a foot in length; they are white and about an inch in diameter. The fruits are oblong-oval, often an inch long, and composed of a large number of drupelets crowded closely together. The seeds are not so large as to be troublesome in the mouth, nor are they hard; the flavor resembles that of certain northern raspberries, being rich, aromatic, and very pleasant. Although excellent when eaten with sugar and cream, the fruit is more commonly used in Ecuador to prepare a sweet conserve or the sirup made in Otavalo, called *jarope de mora*, from which an excellent refresco is made.

"This plant grows on soils of various types, from clay to light sandy loams. It will probably require intelligent pruning to make it fruit abundantly. I believe it possesses great possibilities when cultivated in the southern and southwestern United States, since its fruits are larger than any of the raspberries we now grow and of excellent quality."

52718 and 52719. ZEA MAYS L. Poaceæ. Corn.

52718. "(No. 543a. Ambato, Ecuador. January 11, 1921.) *Morocho blanco.* An excellent white flint corn, grown in the vicinity of Ambato. It is used principally as human food, after grinding and preparation in the form of *mazamorra* (a sort of corn-meal mush); it is also used to make *chicha*, a fermented beverage. Of interest to those engaged in corn breeding."

52719. "(No. 542a. Ambato, Ecuador. January 11, 1921.) *Maiz amarillo.* Yellow starchy corn grown in the vicinity of Ambato, at an altitude of about 8,000 feet. For those interested in corn breeding."

52720. PRUNUS SEROTINA Ehrh. Amygdalaceæ. Capulin.

"(No. 544. Ambato, Ecuador. January 12, 1921.) *Ambato cherry.* This is a remarkable and most excellent variety of the capulin, famous throughout Ecuador. The parent tree is growing on the hacienda of

52715 to 52735—Continued.

Victor Oviedo, at Catiglata, near Ambato; it is usually known, however, as the 'Gonzales tree,' from the name of a former owner of the property.

"In size and quality of fruit this variety is far superior to the great majority of capulís seen in Ecuador and other tropical American countries. It is worthy of propagation by grafting and should be planted in all those regions where the capulí can be grown. It will probably succeed in California, and perhaps also in the Gulf States. It would be a valuable acquisition for the highlands of Mexico and Central America, as well as for other tropical countries where there are plateaus or cultivated regions at altitudes between 6,000 and 10,000 feet.

"The parent tree is probably very old and is one of the largest capulins I have seen. It is about 50 feet high and has a spread of 60 feet. Its fruits, which are very abundantly produced during the first months of the year (from January to March), are as large as the Black Tartarian cherry of California (three-quarters of an inch in diameter), dark maroon, with soft juicy flesh and a seed of about the same size as that of our northern cherries. The flavor is sweet and very agreeable, with a faint trace of bitterness if the fruit is not fully ripe."

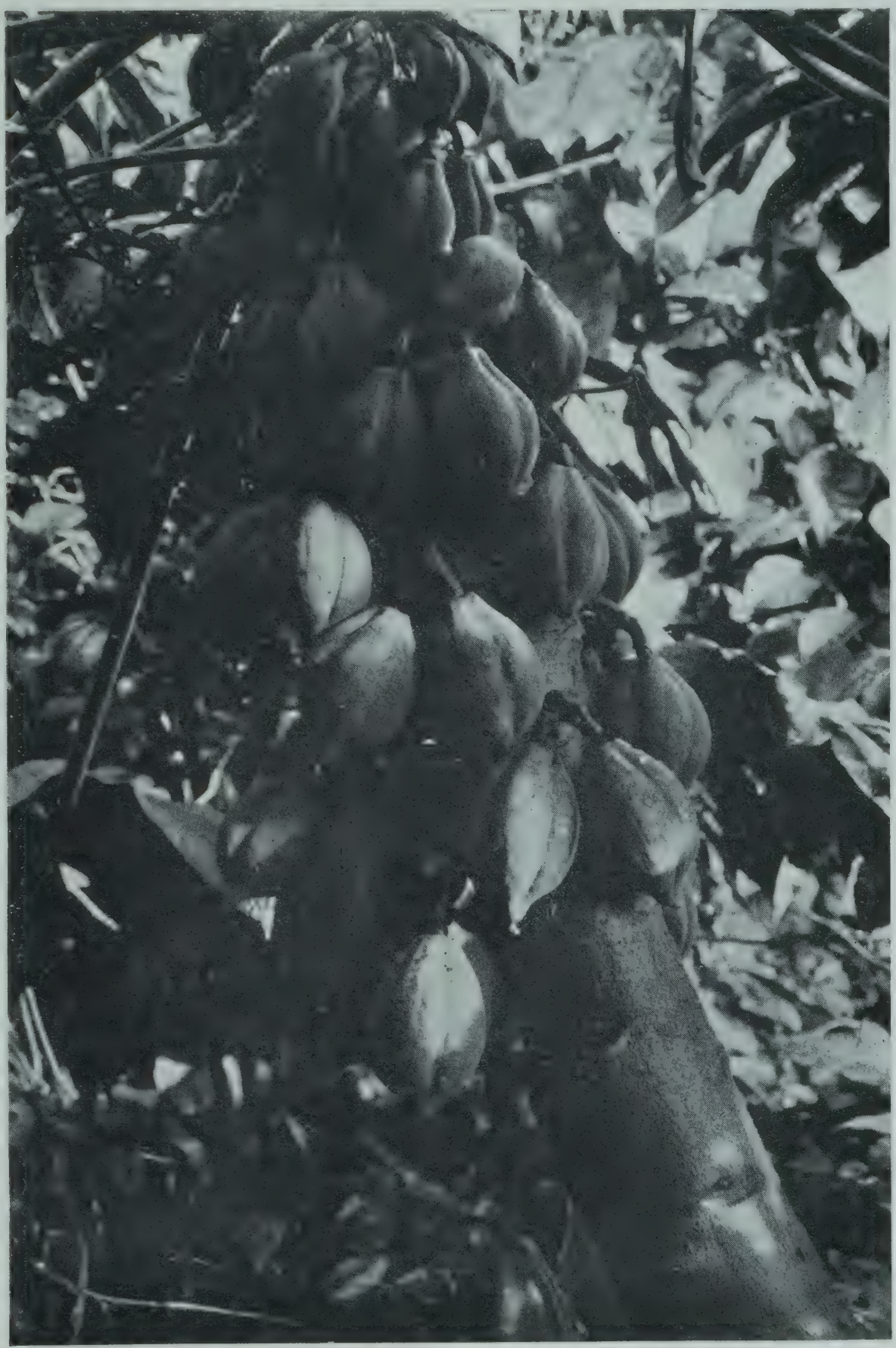
52721. CARICA sp. Papayaceæ. Babaco.

"(No. 547. Ambato, Ecuador. January 12, 1921.) This is called *babaco* throughout the interandean region of Ecuador, where it is cultivated in many places, from Loja Province northward to Carchi Province. I have never seen it except in cultivation, and this only between 6,000 and 10,000 feet in altitude; nor have flowers other than purely pistillate ones been found on any of the numerous plants examined.

"This is, in fact, the most remarkable and valuable of the several interesting species of Carica cultivated in Ecuador. Because of its large fruits, which yield an excellent sauce, because of the relatively low temperatures which the plant can withstand, and because of its habit of producing seedless fruits it is worthy of attention in other countries. It is a smaller plant than *Carica papaya*, rarely reaching more than 10 feet in height. The stem is usually slender, especially when the plants are set closely together, as they are in the small commercial plantations of Ambato. The leaves are glabrous like those of the *higacho* (*Carica* sp., S. P. I. No. 53578), but with fewer lobes than in the latter. The fruits are commonly about a foot long and 3 to 5 inches in diameter; they are truncate at the base, sharply acute at the apex, and conspicuously 5-angled in transverse outline. The flesh is about half an inch in thickness, nearly white, distinctly fragrant, and very acid. It is eaten only after cooking. The large cavity in the center of the fruit contains a quantity of white cottony substance and occasionally a few seeds. The latter are possibly produced when the flowers are fertilized with pollen of other species of Carica (since staminate flowers of the *babaco* are not seen in cultivation).

"The plant is propagated by cuttings and in no other manner. Whether it represents a wild species which I have not seen, or whether it has been derived by cultivation from the *higacho*, I am unable to say; the latter hypothesis does not appear unreasonable. It is worthy of a careful trial in California and Florida."

Fruits of the babaco are shown in Plate IV.



THE CHAMBURO, AN INTERESTING RELATIVE OF THE PAPAYA. (CARICA SP., S. P. I. No. 52716.)

The chamburo is indigenous in the Andes of northern South America and will probably be sufficiently hardy to withstand the winters of southern California and southern Florida. The fruit flesh is half an inch thick and is usually eaten, after being cooked, in the form of a sweet conserve. (Photographed by Wilson Popenoe, Banos, Tungurahua, Ecuador, March 11, 1921; P18482FS.)

FRUITS OF THE BABACO, ONE OF THE MOST VALUABLE SPECIES OF CARICA CULTIVATED IN ECUADOR.
(CARICA SP., S. P. I. No. 52721.)

The babaco is particularly worthy of attention because of its large, usually seedless fruits, which yield an excellent sauce, and because of the relatively low temperatures that it can withstand. Like the chamburo, it will probably do well in southern California and southern Florida. (Photographed by Wilson Popenoe near Ambato, Ecuador, January, 1921. P18377FS.)

A RED-FRUITED VARIETY OF THE ANDES BERRY. (RUBUS GLAUCUS BENTH., S. P. I. No. 52734.)

The Andes berry is one of the most promising fruits of this group introduced from South America, and the berries of the red-fruited variety (which is very rare) have a more delicate flavor than those of the common purplish fruited form. The luscious fruits resemble our blackberries, and some varieties are said to be superior in flavor. (Photographed by Wilson Popenoe, near Ambato, Ecuador, January, 1921; P18356FS.)

THE TALIPOT PALM OF TROPICAL ASIA. (CORYPHA UMBRACULIFERA L., S. P. I. No. 52802.)

Often growing to a height of more than 80 feet, this giant palm attains a spread of about 200 square feet. The seeds are dyed red and sold as coral for beads, the pith of the trunk yields a kind of sago, and the leaves are made into fans and mats. It will probably do well in Porto Rico, and in the Canal Zone and other parts of tropical America. (Photographed by J. F. Rock, Okima, Burma, January, 1921; (P22686FS.

52715 to 52735—Continued.

52722 to 52730. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

52722. "(No. 555. Ambato, Ecuador. January 12, 1921.) *Calvache* potato, grown near Ambato. This is a productive and late-maturing variety, grown mainly at the lower altitudes. The tubers are elliptic-obovate and compressed to long and slender in form, of medium size, with a light rose-pink surface marked with very few and shallow eyes. The flesh is white and of good quality."

52723. "(No. 551. Ambato, Ecuador. January 12, 1921.) *Dominga* potato, grown near Ambato. This variety, which is cultivated at the lower altitudes of this region, is moderately productive. The tubers are medium sized, roundish oval, light rose colored, with white flesh of good quality. One of the most important commercial varieties."

52724. "(No. 552. Ambato, Ecuador. January 12, 1921.) *Huagrasinga* potato, grown near Ambato. This is a late-maturing variety, with tubers irregularly round, pale yellow brown, with violet-colored areas around the rather deep eyes. The flesh is white, of fair quality. It is slightly resistant to late-blight and is grown at both high and low altitudes."

52725. "(No. 549. Ambato, Ecuador. January 12, 1921.) *Inglesa* potato, grown near Ambato. This moderately productive, late-maturing variety has round, good-sized tubers of dark violet, with moderately numerous and deep eyes. The flesh is white and of good quality. This has proved at Ambato to be the most resistant to late-blight of all the varieties tested."

52726. "(No. 554. Ambato, Ecuador. January 12, 1921.) *Leona* potato, grown near Ambato. A late-maturing, productive variety which is most successful at the higher altitudes. The tubers are round, medium to large, brown, the eyes few and not very deep. The flesh is white, and superior in quality to that of all others cultivated in the Ambato region. The keeping qualities of the variety are excellent."

52727. "(No. 550. Ambato, Ecuador, January 12, 1921.) *Leona Pazmina* potato, grown near Ambato. This late-maturing and moderately productive potato yields tubers of oval to round form, medium size, dark-red color, with moderately few and not very deep eyes. The flesh is white and of excellent quality. The plant, which grows best at high altitudes, is moderately resistant to late-blight. The variety keeps better than most of the others known at Ambato."

52728. "(No. 556. Ambato, Ecuador. January 12, 1921.) *Manzana* potato, grown near Ambato. This productive and late-maturing variety, cultivated mainly at the lower altitudes of the Ambato region, produces tubers of irregularly round form, medium size, with a rose-pink surface and rather numerous and deep eyes marked with yellow. The flesh is white and of good quality. The plant is not resistant to late-blight."

52729. "(No. 548. Ambato, Ecuador. January 12, 1921.) *Tabla* potato, grown near Ambato. This is one of the largest potatoes cultivated in Ecuador. The plant is very productive, and the tubers, which mature rather late in the season, are elongated,

52715 to 52735—Continued.

flattened, light red, with few and not very deep eyes. The flesh is white and of good quality. The plant has shown itself fairly resistant to late-blight."

52730. "(No. 553. Ambato, Ecuador. January 12, 1921.) *Yungara* potato grown near Ambato. This productive and late-maturing variety yields oblong medium-sized tubers, light rose colored with yellow areas around the few and not very deep eyes. The flesh is white and of good quality; the plant is not resistant to late-blight. One of the important commercial potatoes of central Ecuador."

52731. FRAGARIA CHILOENSIS (L.) Duchesne. Rosaceæ. **Chilean strawberry.**

"(No. 550. Guachi Grande, near Ambato, Ecuador. January 12, 1921.) *Ambato* strawberry. Of unusual interest for culture in the Southwest."

For previous introduction, see S. P. I. No. 52576.

52732. PYRUS COMMUNIS L. Malaceæ. **Pear.**

"(No. 540. Ambato, Ecuador. January 11, 1921.) *Pera nacional* or *pera común*, from a huerta near Ambato. For trial as stock plants.

"This small pear, probably introduced into Ecuador by the Spaniards in colonial times, is cultivated commercially in the vicinity of Ambato, whence the fruits are carried to Quito, Guayaquil, and other points in the Republic. It is also grown in the Azuay, near Cuenca. Propagation is by suckers which spring up abundantly beneath the old trees.

"The species is vigorous in habit, trees sometimes reaching 25 feet in height and producing their fruits in great abundance. The ripening season at Ambato is from January to March. The fruit is pyriform, an inch or slightly more in length, yellow, and firm in texture even when fully ripe. The flesh is white, rather mealy, not very juicy, and of a mild, pleasant flavor. It is very rare for any seeds to be found. The plant is often used at Ambato as a stock on which to graft the large-fruited pears known as *peras de manteca*."

52733 and 52734. RUBUS GLAUCUS Benth. Rosaceæ. **Andes berry.**

For previous introduction, see S. P. I. No. 52717.

52733. "(No. 539. Ambato, Ecuador. January 11, 1921.) *Mora de Castilla*, or Andes berry."

52734. "(No. 545. Ambato, Ecuador. January 12, 1921.) *Mora de Castilla.* A red-fruited variety of this excellent Andean berry, obtained from Prof. Abelardo Pachano. This variety is rare, and its fruits are of a more delicate flavor than the common sort. It should have a careful trial in the southern and southwestern United States."

For a more thorough discussion of this berry the reader is referred to the Journal of Heredity, vol. 12, pp. 387 to 393.

A fruiting spray and several fruits of the Andes berry (natural size) are shown in Plate V.

52735. DATURA SANGUINEA Ruiz and Pav. Solanaceæ.

"(No. 558b.) From a dooryard in Ambato. Seed pods of the common datura cultivated as an ornamental plant in the vicinity of Ambato. The flowers are orange-red."

52736. DIGITARIA EXILIS (Kippist) Stapf. Poaceæ. **Fundi grass.**

From Sierra Leone, Africa. Seeds presented by D. W. Scotland, Director of Agriculture, Njala, Mano. Received March 23, 1921.

"An annual grass, much resembling crabgrass, grown by Nigerian tribes as a supplementary food grain. This grass, called by natives 'fundi,' is often grown in the millet fields, and yields a crop of fine seed which is made into flour for the preparation of a kind of porridge. *Fundi* was known in Africa in 1798, but it was first brought into England in 1842 by R. Clarke, who describes the grain as about the size of mignonette seed. It is sown in May or June, carefully weeded in August, and ripens in September. The plant grows to a height of 18 inches, and the slender stems bend to earth by the weight of the grain. It prefers light or even rocky soil. Clarke says the grain is 'delicious' for food. *Fundi* was tested at McNeill, Miss., in 1920, and it is believed that it will give from three to five cuttings of hay in a season or a larger amount of pasturage." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 49524.

52737 and 52738. TRITICUM AESTIVUM L. Poaceæ. (*T. vulgare* Vill.) **Common wheat.**

From St. Jean le Blanc, Orleans, France. Seeds presented by M. Edmond Versin. Received March 11, 1921. Quoted notes by M. Versin.

52737. "*Blé de Chine No. 1.* Extra early, a little bearded; this took a diploma of honor as the finest head at Bordeaux, France."

52738. "*Blé de Chine No. 2.* Very early and beardless."

52739. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

From Haifa, Palestine. Seeds presented by Amram Khazanoff, Jewish Colonization Association. Received March 11, 1921.

"Seeds of the *Musmush kelabi*, the bitter-kerneled apricot or dog's apricot, which is used in the Damascus region as stock for grafting the apricot under irrigation. The fruit of the *Musmush kelabi* is used for the manufacture of apricot paste, or *kamr-ed-din*." (*Khazanoff.*)

52740 to 52744.

From Medellin, Colombia. Seeds presented by W. O. Wolcott. Received March 17, 1921.

52740. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceæ. **Tree-tomato.**

An evergreen, semiwoody plant, cultivated throughout the Tropics for its edible, ovoid, smooth-skinned fruits. When mature these reddish yellow fruits have an agreeable subacid flavor and although pleasant when eaten fresh are used chiefly for stewing and for jam or preserves.

52741 to 52743. Poaceæ.

"These grasses grow from 2 to 4 feet tall. They apparently require very little moisture, for I gathered some from cracks in the rocks. The natives say they are fine for fattening stock." (*Wolcott.*)

52741. ANDROPOGON MINARUM (Nees) Kunth. **Beard-grass.**

A large perennial grass allied to the bluestem of the eastern United States.

52740 to 52744—Continued.

52742. MELINIS MINUTIFLORA Beauv. **Molasses grass.**

A stout perennial with viscid pubescent foliage and narrow many-flowered panicles of very small awned spikelets. (Adapted from *Hitchcock, United States Department of Agriculture Bulletin No. 772.*)

52743. PENNISETUM SETOSUM (Swartz) L. Rich. **Mission grass.**

A tall perennial grass related to pearl millet; native to South America and Central America.

52744. VICIA FABA L. Fabaceæ. **Broad bean.**

"The beans are native here. The natives use them as food and also as stock feed. The stalks grow very rank, from 2 to 3 feet high, and are from one-fourth to one-half of an inch thick; they are covered with heavy leaves all the way from the ground up. The natives call them *habas silvestre.*" (*Wolcott.*)

52745 to 52751.

From Moulmein, Burma. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received March 18, 1921. Quoted notes by Mr. Rock.

52745. ANNONA RETICULATA L. Annonaceæ. **Custard-apple.**

"Seed from choice and delicious fruits of '*bullock's-heart.*'"

52746. BAUHINIA MALABARICA Roxb. Cæsalpiniaceæ.

"(Western Siam. December 16, 1920.) A large tree 30 to 40 feet in height, with a large round crown and thousands of long pendent racemes; flowers not seen; found in dense forest near Raheng, western Siam."

52747. BAUHINIA sp. Cæsalpiniaceæ.

"(Myawaddi, Burma. December 21, 1920.) A shrub or small tree in dry forests of eastern Burma, one day's journey from the Siamese boundary. The flowers are arranged in threes in the axils of all the leaves, standing erect on the upper surface of the branches."

52748. BOMBAX INSIGNE Wall. Bombacaceæ. **Cotton tree.**

"A large forest tree of the lowland jungle found along the banks of the Meping River, western Siam. The tree reaches a height of 80 to 100 feet. The floss is used by the natives for stuffing pillows; it is also spun."

52749. IPOMOEA HORSFALLIAE Hook. Convolvulaceæ. **Morning-glory.**

"Variety *briggsii.* A splendid crimson-flowered morning-glory which reaches large dimensions and is, of course, a perennial. It flowers for many months during the year, especially during the cold season; the crimson flowers are borne in large clusters."

52750. LAGERSTROEMIA sp. Lythraceæ.

"An ornamental tree 30 feet in height, with showy pink flowers. It grows in the very dry jungle beyond Palut, western Siam, with *Strychnos nux-vomica, Dipterocarpus tuberculatus, Cassia fistula,* etc. It is worthy of cultivation."

52751. ORYZA SATIVA L. Poaceæ. **Rice.**

"Black rice from Oktada Martaban; fresh seed from this year's yield."

52752 and 52753. Lupinus spp. Fabaceæ.

From Paris, France. Seeds presented by Vilmorin-Andrieux & Co. Received March 30, 1921.

52752. Lupinus albus L. Fabaceæ. **White lupine.**

"A tall-growing lupine with white flowers. The variety *vulgaris* is cultivated in southern Europe. Formerly this variety was cultivated in Germany but usually does not mature there. The bitter principle in both seeds and plants make the crop useful only for green manuring. In Germany it has been superseded by the yellow lupine." (*A. J. Pieters.*)

For previous introduction, see S. P. I. No. 39347.

52753. Lupinus luteus L. Fabaceæ. **Yellow lupine.**

"A species native to southern Europe and cultivated especially in Germany for green manure. It is more resistant to drought than the white, and will thrive on thin, lime-poor soils. This plant does not make as large a mass of growth as the white but ripens earlier." (*A. J. Pieters.*)

For previous introduction, see S. P. I. No. 39349.

52754. Avicennia officinalis L. Verbenaceæ. White mangrove.

From Manila, Philippine Islands. Cuttings presented by Adn. Hernandez, director, Bureau of Agriculture. Received February 9, 1922.

A small Philippine tree found along the outer edges of swamps; the dark-green, leathery leaves are hairy beneath and about 4 inches long. The small, orange-yellow flowers are borne in few-flowered heads, and the fruit is a single-seeded capsule. The wood is hard, heavy, difficult to split, and is rarely attacked by beetles. (Adapted from *Brown, Minor Products of Philippine Forests, vol. 1, p. 80.*)

52755. Aleurites moluccana (L.) Willd. Euphorbiaceæ. (*A. triloba* Forst.) Lumbang.

From Dania, Fla. Nuts presented by George W. Bloom. Received December 20, 1920. Numbered March 31, 1921.

"*Candlenut.* The tree is 50 feet high with a spread of 30 feet. It bore 2 bushels or more of nuts. Three young plants that came up under the tree were pulled up and planted in cans in the latter part of August, and they are now 2 feet high; these will be planted on my place here in Dania the last of this month. There are also two plants from nuts sprouted in cans. Three uncracked nuts were planted and three that were cracked just enough to break the shell. Two of the cracked nuts developed into trees. The nuts have been given to everyone that cared to try or plant them. Apparently the kernels are not injurious, as they have been eaten by a number of children with no noticeable ill effects." (*Bloom.*)

52756 to 52773.

From Bedford, England. Plants presented by Laxton Bros. Received March 15, 1921. Quoted notes from Laxton, Strawberries and Small Fruits, 1919 and 1920.

52756. Fragaria moschata Duchesne. Rosaceæ. **Hautbois strawberry.**

"*Royal.* A fine alpine form, with rich aromatic flavor."

52757. Fragaria vesca L. Rosaceæ. **Wood strawberry**

"*Red Alpine.* The best form of alpine strawberry."

52756 to 52773—Continued.

52758 to 52762. FRAGARIA spp. Rosaceæ. **Garden strawberry.**

52758. "*International.* A plant of very compact growth and robust habit, producing long, leathery, vigorous foliage and very handsome wedge-shaped fruit which ripens about midseason. The bright, glowing-scarlet fruit has white flesh, very rich in flavor, and particularly firm and solid in texture."

52759. "*King George V.* A fine, new, early, forcing, and outdoor strawberry raised by crossing *Louis Gauthier* × *Royal Sovereign.* It is a really magnificent fruit quite as large as, if not larger than, *Sovereign*, but it ripens nearly a week earlier, when grown side by side. The fruit is the brightest scarlet, but the flesh is orange-red throughout. The flavor is delicious, excelling *Royal Sovereign* or any other forcing strawberry with which we are acquainted. It is a heavier cropper than *Sovereign*, forms splendid crowns, and sets and swells particularly freely."

52760. "*La Perle.* A very fine everbearing variety of French origin. The large light-scarlet fruit has firm sweet flesh."

52761. "*Maincrop.* A hybrid between *Bedford Champion* and *Laxton*, producing fruit which combines size with flavor. A particularly vigorous grower throwing out a profusion of very bold large trusses of firm-textured, coxcomblike fruits. The color is very rich and the flavor good; both the outer skin and inner flesh are firm, which qualities will enable it to bear packing and transit well."

52762. "*White Perpetual.* A hybrid between *Louis Gauthier* and *St. Antoine;* it is a true perpetual throwing up its trusses of large, nearly white fruits until stopped by frost in November. The flavor is very sweet and luscious. The habit is similar to that of *St. Antoine.*"

52763 to 52772. RUBUS IDAEUS L. Rosaceæ. **European raspberry.**

52763. "*Abundance.* The richest flavored raspberry in cultivation, a red raspberry seedling raised in the Lincolnshire fruit-growing district, where it is being largely planted. The plant is a very strong grower and enormous cropper."

52764. "*Baumforth.* Baumforth's seedling is one of the best for general use; it produces an abundance of large dark-crimson excellent-flavored fruits."

52765. "*Bountiful.* The strongest grower and heaviest cropper in existence. The canes are strong and vigorous and entirely self-supporting. The handsome bright-crimson conical fruit is larger than that of *Superlative;* it is borne on long trusses. The flesh is sweet and juicy, but is firm and stands travel well. While *Superlative* and older sorts become worn out after many years' propagating from canes, this variety has all the vigor of a seedling. It is an improvement on the *Bedford*, which it resembles in color of fruit and foliage, except that the color is of a darker tint than that variety; the firm fruit is also larger and equally good in flavor."

52766. "*Devon.* A fine new red raspberry with a large conical fruit of fine flavor and bright color. A very strong grower."

52756 to 52773—Continued.

52767. "*Hornet.* A form with round deep-red berries produced in great clusters."

52768. "*Magnum Bonum.* An early fruiting raspberry with sweet white fruit, better than that of *Antwerp.*"

52769. "*Merveille de Rouge.* A fine autumn-fruiting raspberry, bearing in September on the young growth made in the same summer, large, very sweet fruits."

52770. "*Norwich Wonder.* An old but useful variety, bearing abundantly large excellent-flavored fruit."

52771. "*October Red.* An autumn-fruiting raspberry."

52772. "*Semper Fidelis.* A good cropper coming in after the others are over. It is more acid than others, and useful for preserving."

52773. RUBUS sp. Rosaceæ. **Blackberry.**

"*Edward Langley.* A variety selected after many years' trial by E. M. Langley, of Bedford, from the best of our common wild blackberries; it has proved to be a very fine acquisition under cultivation. It is better in flavor and crop than any of the American sorts."

52774. LINUM USITATISSIMUM L. Linaceæ. **Flax.**

From Gizeh, Egypt. Seeds presented by the director, Horticultural Section. Received March 25, 1921.

For experimental purposes.

52775. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

From Holguin, Cuba. Seeds presented by Thomas R. Towns. Received March 24, 1921.

"Pole beans that are common here in Cuba. Instead of being annuals, they are perennials and bear several crops during the year. They bear abundantly and are rich and mealy." (*Towns.*)

52776 to 52784. LINUM spp. Linaceæ. **Flax.**

From Montevideo, Uruguay. Seeds presented by Sr. Luis Guillot, Dirección General de Paseos Públicos. Received March 23, 1921.

52776. LINUM AFRICANUM L.

A species with opposite linear-lanceolate leaves and terminal pedunculate flowers. Native to South Africa.

52777. LINUM CORYMBIFERUM Desf.

A species with erect stems, 6 to 10 decimeters high, branching above into dichotomous, corymbose, filiform branchlets. The lanceolate, erect, scattered leaves are 13 to 35 millimeters long, and the yellow flowers are borne singly on short pedicels. Native to northwestern Africa. (Adapted from *Desfontaines, Flora Atlantica, vol. 1, p. 279.*)

52778. LINUM GRANDIFLORUM Desf.

A perennial Algerian plant, 30 to 40 centimeters high, with herbaceous stems from a shrubby base. The leaves are obovate-lanceolate to linear. The pink flowers, 3 centimeters long, are in forked cymes. (Adapted from *Muschler, Manual Flora of Egypt, vol. 1, p. 568.*)

52776 to 52784—Continued.

52779. LINUM NERVOSUM Waldst. and Kit.

A perennial herb with erect simple stems, branching at the apex. The sessile erect leaves are lanceolate and the large blue flowers are in panicles. Native to grassy forests near Pancsova, Hungary. (Adapted from *Waldstein, Descriptiones et Icones Plantarum Rariorum Hungariae, vol. 2, p. 109.*)

52780. LINUM PALLESCENS Bunge.

An erect, glabrous, pale glaucous perennial with linear, erect-spreading thickish leaves and pale-blue or white flowers. Native to Siberia. (Adapted from *Ledebour, Flora Altaica, vol. 1, p. 438.*)

52781 and 52782. LINUM USITATISSIMUM L.

52781. Received as *Linum monadelphum*, which is now generally referred to *L. usitatissimum.*

For previous introduction, see S. P. I. No. 50160.

52782. A form of the ordinary species of flax. Introduced for experimental work in cereal investigations.

For previous introduction, see S. P. I. No. 50160.

52783. LINUM sp.

Received as *Linum floccosum*, for which name a place of publication has not been found.

52784. LINUM sp.

Received as *Linum regale*, for which name a place of publication has not been found.

52785 and 52786. CYAMOPSIS TETRAGONOLOBA (L.) Taub. Fabaceæ. (*C. psoraloides* DC.) Guar.

From Nagpur, Central Provinces, India. Seeds presented by D. Clouston, Director of Agriculture, Central Provinces. Received March 25, 1921. Quoted notes by Mr. Clouston.

"Two varieties generally cultivated about Nagpur."

52785. "*Deshi guar-phali.*" 52786. "*Telia guar-phali.*"

52787. PERSEA SCHIEDEANA Nees. Lauraceæ. Coyo.

From San Jose, Costa Rica. Seeds presented by Mrs. Amparo Zeledón, through A. Alfaro, director, Museo Nacional. Received March 25, 1921.

This plant, known as *yas* in Costa Rica and *coyo* in Guatemala, is found from southern Mexico to Panama. In Costa Rica it grows abundantly on the slopes of Irazu at altitudes between 4,000 and 6,000 feet. Its fruits greatly resemble avocados in character.

Up to the present the *coyo* has not shown much promise in Florida or California. It is somewhat slow of growth and probably will not bear until the trees are at least 8 or 10 years old. Efforts are being made to obtain the best seedling varieties from Guatemala and to propagate them by grafting. In this way it will probably be possible to encourage early fruiting and to have fruit of better quality than would be obtained from most seedlings.

Extended data concerning this species and its cultural requirements will be found in United States Department of Agriculture Bulletin No. 743, "The Avocado in Guatemala."

52788 to 52795.

From Stockholm, Sweden. Seeds presented by Dr. Robert E. Fries, director, Hortus Botanicus Bergianus. Received March 25, 1921.

52788. ARALIA CACHEMIRICA Decaisne. Araliaceæ.

A lax shrub 5 to 10 feet high, with 1 to 3 pinnate leaves pilose above and glabrous or hispid on the veins beneath. The umbels are in elongated panicles a foot long. (Adapted from *Hooker, Flora of British India, vol. 2, p. 722.*)

For previous introduction, see S. P. I. No. 52669.

52789. CHENOPODIUM BONUS-HENRICUS L. Chenopodiaceæ. **Good King Henry.**

An extremely hardy perennial, native to Europe, with a smooth, slightly channeled stem 2 to 3 feet high. The arrow-shaped, smooth dark-green leaves are frosty or mealy on the under surface and rather thick and fleshy. The small green flowers are in close compact clusters, and the small black seeds hold their viability for five years. The leaves are eaten like spinach and the shoots like asparagus as a very early vegetable blanched by simply earthing them up. These delicious shoots are abundant a fortnight before asparagus comes in and for some weeks afterwards. (Adapted from *Robinson, The Vegetable Garden, p. 313.*)

52790 to 52792. DATURA STRAMONIUM L. Solanaceæ.

52790. "Variety *inermis*. This is a recessive variety of *Datura stramonium*. It may be either white flowered or lavender flowered and is readily distinguished from the typical form in having capsules devoid of prickles." (*W. E. Safford.*)

52791. Received as *Datura leichhardtii*, but the seeds agree with those of *D. stramonium*.

52792. "Variety *tatula*. This variety is distinguished from the typical *Datura stramonium* by its lavender flowers and purple stem. The prickly pods are indistinguishable in form from those of the type. This is the dominant form of *D. stramonium*. The white-flowered type as well as the smooth-capsuled form usually called *D. inermis* are both recessive forms of the same species." (*W. E. Safford.*)

52793. DATURA sp. Solanaceæ.

Received as *Datura ekblomii*, for which name a place of publication has not been found.

52794. ELYMUS ARENARIUS L. Poaceæ. **Lyme-grass.**

A stout erect perennial 2 to 4 feet high, with extensively creeping rootstocks, rather firm, flat sharp-pointed leaves, and terminal, usually densely flowered spikes. Found in maritime sands of Greenland and Labrador to Maine, Alaska to California, and on the shores of the Great Lakes. This grass is one of the best species known for binding drifting sands, and in northern Europe it has been cultivated with beach-grass (*Ammophila arenaria*) for this purpose, the two species forming an admirable combination. The seeds are used for food by the Digger Indians of the Northwest. (Adapted from *United States Department of Agriculture, Division of Agrostology Bulletin No. 1, p. 307.*)

52788 to 52795—Continued.

52795. HEMEROCALLIS FULVA L. Liliaceæ.

The brown day lily, native to Asia, which is quite as pretty as the famous Orange lily and indeed makes a greater show. It makes half a dozen or more offsets every year, so that a large clump is soon formed. (Adapted from *Meehan's Monthly, vol. 5, p. 193.*)

52796. DIOSPYROS LOTUS L. Diospyraceæ.

From Yokohama, Japan. Seeds presented by the Yokohama Nursery Co. Received March 28, 1921.

Introduced for use as stocks.

For previous introduction and description, see S. P. I. No. 44535.

52797. CASSIA NODOSA Buch.-Ham. Cæsalpiniaceæ.

From Honolulu, Hawaii. Seeds presented by Dr. Harold L. Lyon, in charge, Department of Botany and Forestry. Received March 29, 1921.

A moderate-sized tree native to eastern Bengal and Malay Peninsula, very beautiful when bearing its profusion of bright-pink rose-scented flowers during May and June. The cylindric pods are 12 to 15 inches long. The tree is deciduous in dry weather. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 294.*)

52798. FLINDERSIA MACULOSA (Lindl.) F. Muell. Meliaceæ. Leopard tree.

From Sydney, New South Wales, Australia. Seeds presented by George Valder, Director of Agriculture. Received March 20, 1921.

In the opinion of many experienced growers the leopard tree stands next in value to the *kurrajong* as a fodder tree. It grows from 30 to 45 feet high or more, and its trunk is curiously spotted, hence its popular name. From the trunk and larger branches exude large quantities of amber-colored gum of a pleasant flavor. The leopard tree is found growing over immense tracts of country in the interior of New South Wales. Its smaller branchlets have a somewhat pendulous habit which gives a well-grown specimen a decidedly ornamental appearance. During very dry periods this tree is cut down for stock feed, sheep being particularly fond of its leaves and thriving on them. The chemical analysis of the partially dried leopard-tree leaves gave the following results (in percentages): Water, 41.70; ash, 3.42; fiber, 11.43; albuminoids, 9.31; carbohydrates, 30.22. Nutrient value, 48.5; albuminoid ratio, 1 to 4.5.

The leopard tree is well worth conserving on those areas where it is already growing and planting in the driest districts for feeding to stock during prolonged droughts. Under ordinary conditions it produces quantities of seed, which when ripe and sown in the ordinary way germinates readily, so that there would be no difficulty in raising any number of plants. This tree also yields a serviceable timber of a bright-yellow color, nicely marked, close grained, and exceedingly tough and elastic. (Adapted from the *Pastoral Finance Association Magazine, vol. 5, No. 18, p. 33.*)

52799. Citrus sinensis (L.) Osbeck. Rutaceæ. Orange.

From Jerusalem, Syria. Budwood presented by J. Ettinger, director, Agriculture and Colonization Department. Received March 31, 1921.

"Bud sticks of the Jaffa orange, *Shamooti*." (*Ettinger.*)

The Jaffa orange is one of the largest, larger even than the Washington Navel. Its form is obovate, its skin very thick, and its fruit seedless. The tree is not spiny, and the fruit, therefore, is never scarred by thorns. Its shipping qualities are excellent. (Adapted from *Aaronsohn, Agricultural and Botanical Explorations in Palestine, p. 26.*)

For previous introduction, see S. P. I. No. 51215.

52800 and 52801.

From Sydney, New South Wales, Australia. Seeds presented by George Valder, Director of Agriculture. Received March 31, 1921.

52800. Acacia pendula A. Cunn. Mimosaceæ. Wattle.

"One of the most beautiful of all the Australian wattles is *Acacia pendula*, the *boree* of the aborigines, and generally known amongst stockmen as *myall* and *weeping myall*. It is a handsome evergreen tree, attaining sometimes a height of 35 feet, and occurring more or less abundantly over large areas in the interior. The lance-shaped silver-gray leaves (phyllodes) are 2 to 5 inches long; both sheep and cattle are so partial to them that one may travel for days in a country where these animals are pastured and rarely see a young tree, as the seedlings are eaten as soon as they are well above the ground. In very dry seasons the *myall* is often cut down and fed to sheep and cattle, and they seem to thrive on it. The chemical analysis of the partially dried leaves of this tree gave the following results, which show they are of good feeding value: Water, 48.45; ash, 4.45; fiber, 19.64; albuminoids, 9.62; carbohydrates, 16.63; nutrient value, 29.0; albuminoid ratio, 1 to 20.

"Since the horses do not eat the leaves, they may be allowed to graze in paddocks where the young myalls are growing. When allowed to grow undisturbed for a time the *myall* produces an abundance of seeds, which when mature retain their vitality for many years, and sometimes lie in the ground for a long period, indeed, until the weather and soil conditions are favorable for their germination. A well-grown specimen has a trunk about 3 feet in circumference and yields an excellent timber which is heavy, close in the grain, and of a rich dark-brown color and beautifully marked, having a delightful fragrance of violets, which it retains for a long time after being cut. In pre-war times the timber of this tree was used in Europe for veneering, for which it is well adapted; and before the country was settled the aborigines used it in the manufacture of their weapons." (*Pastoral Finance Association Magazine, vol. 5, No. 18, p. 131.*)

52801. Geijera parviflora Lindl. Rutaceæ.

"*Wilga*. From Nyngan, New South Wales." (*Valder.*)

A tall shrub or tree native to the interior of New South Wales, where it reaches a height of about 30 feet. It has slender pendulous branches, narrow leaves 3 to 6 inches long, and when well developed has a highly ornamental appearance, having something of the aspect of a weeping willow. It has remarkable drought-enduring qualities, and the leaves are often fed to sheep, which are very fond of them. (Adapted from the *Pastoral Finance Association Magazine, vol. 5, No. 18, p. 132.)*

For previous introduction, see S. P. I. No. 49892.

52802 and 52803.

From Burma. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received April 5, 1921.

52802. CORYPHA UMBRACULIFERA L. Phœnicaceæ. **Talipot palm.**

"*Talipot palm.* From Monywa, upper Chindwin River, Burma." *(Rock.)*

"The *talipot* palm is one of about five species belonging to the genus *Corypha*. It has a ringed trunk, generally remarkably straight and reaching a height of over 80 feet. Its leaves are of gigantic size, possibly the largest fan leaves of all palms. The petiole is 7 feet long and armed with spines on the margins. The blade is about 6 feet long and 16 feet broad with segments numbering from 95 to 100, and these are again bilobate. The flowers are white to cream colored and are borne in huge terminal panicles often 20 feet long. The palm flowers but once, after which it dies. The fruit is a roundish one-seeded drupe.

"This enormous palm is a native of Ceylon and the Malabar coast but is now cultivated in most tropical countries. The flowering time begins usually in the hot season, and the seeds ripen about 9 or 10 months afterwards. Each tree has a spread of about 200 square feet.

"The leaves of this palm are made into fans, mats, and umbrellas; the segments were used by the Cinghalese to write on. The sacred Pali texts of the Buddhist literature of Ceylon are all written on the leaf segments which are supposed to have withstood the ravages of ages.

"The seeds, which are like ivory, are employed in India for the manufacture of beads; they are sometimes colored red and sold as coral. The pith of the trunk yields a kind of sago; it is beaten to flour and baked into cakes." *(Rock, The Ornamental Trees of Hawaii, p. 19.)*

For an illustration of the talipot palm, see Plate VI.

52803. TARAKTOGENOS KURZII King. Flacourtiaceæ. **Chaulmoogra tree.**

"(True chaulmoogra from the upper Chindwin, January, 1921.) The bark of these trees is smooth and pale yellowish brown; the trunks are straight; the branches, which appear quite low down, are at right angles to the trunk but droop downward, giving the trees a pyramidal shape and the aspect of an old Abies, or fir. The fruits, which are perfectly round and not pointed at the apex, are the size of a large orange, of a light-fawn color and velvety tomentose. They are on short thickened peduncles and are borne on the ends of the flexible branches which become pendent, owing to the weight of the fruits." *(Rock.)*

For further information concerning this tree and allied species, see Rock, "The Chaulmoogra Tree and Some Related Species," United States Department of Agriculture Bulletin No. 1057, pp. 10–27.

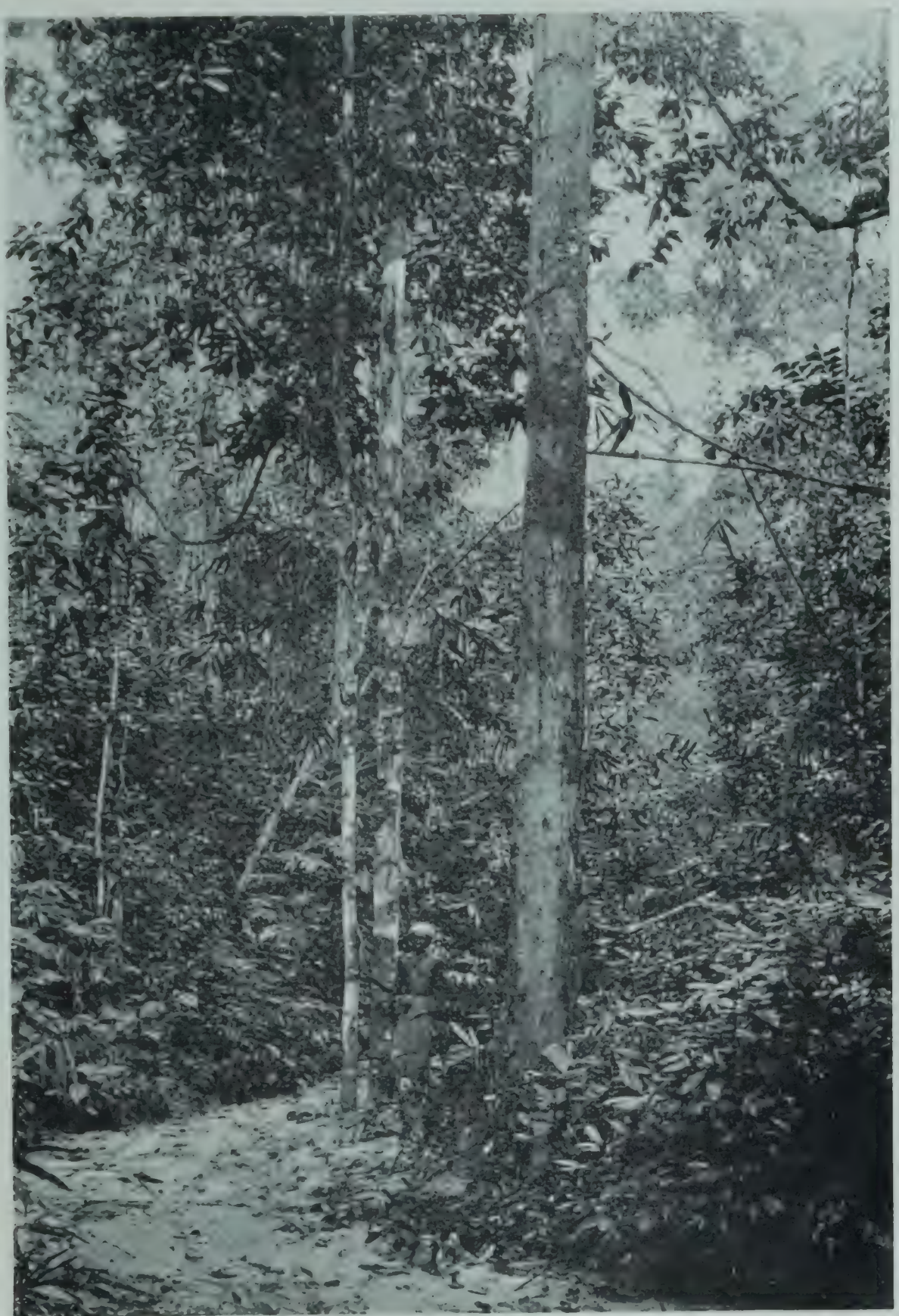
The chaulmoogra tree is illustrated in Plate VII, and its fruits are shown natural size in Plate VIII.

52804. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**

(*Sechium edule* Swartz.)

From Guatemala. Fruit presented by Harry Johnson. Received March 17, 1921.

"These chayotes come from the damp, hot coastal region, near Lake Izabal. They may do well in Florida and not damp-off so badly in the rains." *(Johnson.)*



THE CHAULMOOGRA TREE OF BURMA. (TARAKTOGENOS KURZII KING, S. P. I. No. 52803.)

Doctors MacDonald and Dean, of Hawaii, consider it to be established that the fatty acids of the oil from the seeds of this tree are specific in leprosy, and it is certain that preparations of this oil have been of great help in the treatment of this dread disease. The trees near the native are chaulmoogra trees; the one in the foreground is an oak. (Photographed by J. F. Rock, near Khoung Khew, Upper Chindwin, Northwest Burma, January 20, 1921; P22773FS.)

FRUITS OF THE CHAULMOOGRA TREE. (TARAKTOGENOS KURZII KING, S. P. I. No. 52803.)

These fruits, shown here in natural size, are of a light fawn color. The oil is pressed cold from the kernels of the seeds after the seeds have been thoroughly washed, dried in the sun for one or two days, shelled, and the kernels crushed between corrugated-iron rollers. It is preparations of the ethyl esters of this oil that have been used so successfully in the treatment of leprosy. (Photographed by J. F. Rock, near Kyokta, Upper Chindwin, Burma, January, 1921; P22751FS.)

"The fruit is medium-sized, smooth, light green, appressed-pyriform, with scattered spines which are more prominent toward the fissure. Rust-colored irregular cracks appear in the skin. A cooking test of one of the two fruits received showed the chayote to be of good quality, the flesh tending toward the mealiness characteristic of the best Guatemalan types. The seed, however, is surrounded by a very tough fibrous seed coat from which extend into the flesh coarse fibers which render the removal of the flesh from the seed coat rather difficult." (*L. G. Hoover.*)

52805. PISUM SATIVUM L. Fabaceæ. **Garden pea.**

From Bussum, Netherlands. Seeds presented by Dr. J. C. Th. Uphof, plant breeder, Nederlandsche Élitezaad Maatschappij. Received March 23, 1921.

"*Mansholt kortstroo erwten* (Mansholt short-straw peas)." (*Uphof.*)

A variety introduced for experimental work.

52806 to 52809.

From Southern Rhodesia. Seeds presented by W. L. Thompson, American Board Mission. Received March 29, 1921. Quoted notes by Mr. Thompson.

52806. ANNONA SENEGALENSIS Pers. Annonaceæ.

"A really delicious fruit with a pronounced flavor."

For previous introduction, see S. P. I. No. 51903.

52807. CALLITRIS WHYTEI (Rendle) Engl. Pinaceæ.
(*Widdringtonia whytei* Rendle.)

"*Native cedar* of this region. These seeds are from trees in our own grounds."

The *Milanji cypress* was originally found at an altitude of 10,000 feet on Mount Milanji in Nyasaland by Alexander Whyte. It is a magnificent tree reaching a height of 140 feet, sometimes with a clear straight stem for 90 feet and a diameter of 5½ feet at 6 feet from the base. The pistillate cones, crowded four to six together on a short lateral shoot, are subglobose and about 1 inch wide when open. The staminate cones are solitary and terminal. The pale reddish timber is of excellent quality and easily worked. The bark on old trees is of great thickness, consisting of layers annually shed and renewed. These fine trees are rapidly disappearing before the forest fires, only those in damp gorges surviving. (Adapted from *Transactions of the Linnean Society, 2d ser., vol. 4, p. 60,* and from *Gardeners' Chronicle, 3d ser., vol. 37, p. 18.*)

52808. PARINARI CURTELLAEFOLIUM Planch. Rosaceæ.

"Seeds about the size of peach pits, from exceptionally large, fine fruits weighing 1½ ounces each. Many tons of fruit were produced in this region during the past season."

A small or medium-sized tree with elliptic-oblong scabrid leaves, glabrescent above, tomentose beneath, 2 to 5 inches long. The tomentose flower panicles are 3 to 6 inches long. The drupe, about the size of an ordinary plum, has a mealy, not unpleasant taste. Native to Mozambique and Upper Guinea. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 368.*)

52809. (Undetermined.)

"Seeds of one of our large timber trees which is 3 to 4 feet in diameter and has cherrylike wood. The seeds are about the size and shape of acorns; the flavor of the kernel reminds one of raw potatoes."

52810 and 52811.

From Lourenco Marques, Mozambique. Seeds presented by John A. Ray, American consul, through Harry B. Shaw, New York City. Received February 19, 1921.

52810. CARICA PAPAYA L. Papayaceæ. **Papaya.**

A variety introduced for selection and breeding experiments.

52811. TRICHILIA EMETICA Vahl. Meliaceæ.

"*Mafurra.*" (*Ray.*)

A very beautiful shade tree 10 to 20 meters high, with a large round head and a blackish trunk. The seeds are the source of a vegetable fat which is used by the natives for greasing the skin. The fat consists of about 55 per cent oleic acid and 45 per cent palmitic acid and has been used in the manufacture of soap. Native to tropical Africa and Arabia. (Adapted from *Chiovenda, Etiopia, p. 88.*)

For previous introduction, see S. P. I. No. 51284.

52812 to 52815. GOSSYPIUM BARBADENSE L. Malvaceæ. Cotton.

From Gizeh, Mouderieh, Egypt. Seeds presented by the director, Botanical Section, Cairo Department of Agriculture. Received February 14, 1921.

The following varieties were presented for experimental work:

52812. *Ashmouni.*
52813. *Assili.*
52814. *Sakel.*
52815. *Zagora.*

52816. RUBUS sp. Rosaceæ. Blackberry.

From Bush Hill Park, Enfield, Middlesex, England. Plants presented by Stuart Low & Co., Royal Nurseries. Received March 7, 1921.

Lowberry. A variety said to bear sloe-black fruits the size of a Logan blackberry.

"This *lowberry* originated on the grounds of Stuart Low & Co. They said in a letter to me that it was sent them in a consignment of blackberries which came from the United States many years ago from some correspondent of whom they have no record. As the plants were seedlings, they were fruited out and this one retained and called the 'lowberry.' The fruit is of the appearance of the Logan blackberry." (*George M. Darrow.*)

52817. PINUS CANARIENSIS C. Smith. Pinaceæ. Pine.

From Santiago, Chile. Seeds presented by F. Albert, consulting forester, Forestry Department, through the United States Forest Service. Received March 5, 1921.

A pine native to the Canary Islands, which thrives in warm temperate climates and whose annual growth exceeds 1 meter in height and 1 centimeter in diameter. It is suited to all soils, from the seacoast to an altitude of 1,500 meters, has a straight trunk even when it grows in an isolated position, and its very thick bark prevents fire spreading from one tree to the other.

The wood of this pine, known in the Canary Islands as "tea," is very hard, very difficult to work, but unequaled for duration and building purposes because it does not rot. When buried it has the resistance of iron.

For some years large plantations of it have been established in South Africa and have done exceedingly well. Excellent results have also been obtained in Chile. (Adapted from *Bulletin de la Société Nationale d'Acclimatation de France, vol. 64, p. 322.*)

For previous introduction, see S. P. I. No. 10710.

52818 to 52834.

From Groningen, Netherlands. Seeds presented by C. Broekema, director, Groninger Zaaizaadvereeniging. Received March 29, 1921. Quoted notes by Mr. Broekema. Other notes adapted from *Groninger Zaaizaadvereeniging, January 5, 1921.*

52818 to 52822. AVENA SATIVA L. Poaceæ. Oats.

52818. "*Gouden regen* (golden drop)."

Svalofs gouden regen. The grain is intense yellow and has a very high weight per hectoliter. In some sandy districts this variety is chosen above all others because it succeeds on poor soil.

52819. "*Mansholt I.*"

This variety was obtained by Dr. Mansholt from a natural cross of *Deensche reuzenhaver* (Danish giant oat). It makes a vigorous growth which sometimes lodges on very rich soil, but it is to be recommended for fertile sandy soils. The grain is yellow, heavier than that of *Gouden regen*, but the weight per hectoliter is not as high. The husk is very thin.

52820. "*Mansholt II B.*"

A variety introduced into the trade in 1912, which, because of its excellent properties has been extensively grown. The straw is fairly stiff, and the yield in long slender grain is very good. In the better soils it has become a competitor of the *zegehaver.*

52821. "*Zegehaver* (Triumphal)."

52822. "*Zwarte President* (Black President)."

This variety has straw which is medium long and weak. The yield on light soils is very good, but on heavy soil the yield is below that of most of the white varieties. Its soil requirements are few, and it ripens very early. The husk is thin, so that it is a first-class feeding oat.

52823 to 52825. HORDEUM DISTICHON PALMELLA Harlan. Poaceæ. Barley.

52823. "*Chevalier* (Chevalier, spring variety)."

A variety with a long narrow well-filled head. The grain yield is good and the weight per hectoliter is very high.

For previous introduction, see S. P. I. No. 5842.

52824. "*Goud* (golden)."

Svalofs goud. A variety with short, thin but strong straw, and small, full, somewhat yellow grain. It is preferred above other varieties by many growers and is extensively cultivated.

52825. [No label.]

52826 and 52827. LINUM USITATISSIMUM L. Linaceæ. Flax.

52826. "*Blawbloeilynzaad.*"

Blue-flowered flax, the original seeds of which were imported from Russia.

52827. "*Witbloeilynzaad.*"

White-flowered flax. In the better flax districts this white-flowered variety has been increasingly cultivated during the last few years because it gives high yields of seeds and fiber. This form can better withstand unfavorable weather and is less particular about soil conditions.

52818 to 52834—Continued.

52828 and 52829. PISUM SATIVUM L. Fabaceæ. Garden pea.

52828. "Hand-picked peas."

52829. "*Mansholt kortstroo erwten* (Mansholt short-straw peas)."

52830. TRITICUM AESTIVUM L. Poaceæ. Common wheat.
(*T. vulgare* Vill.)

"*Japhet zomertarwe* (Japhet summer wheat)."

For previous introduction, see S. P. I. No. 44949.

52831 to 52834. VICIA FABA L. Fabaceæ. Broad bean.

52831. "*Gelezen wierboonen* (wier beans, hand picked)."

A variety smaller than the *waalsche boon*, and satisfactory on less fertile soils, where it gives good yields.

52832. "*Paardeboon* (horse beans)."

This variety thrives in all kinds of soils from the heaviest clay to the lightest sandy soils. In rich soils it may grow too much to leaves so that the yield is decreased.

52833. "*Tuinboon* (garden beans)."

A variety generally known and cultivated as the broad bean which is in the trade in Groningen. The yield is usually very good, up to 50 hectoliters per hectare. It requires, however, a fairly fertile, medium-heavy soil. When picked green it is a very nutritious and tasteful vegetable.

52834. "*Witkiem* (white-germ beans)."

52835 to 52840.

From Bussum, Netherlands. Seeds presented by J. C. Th. Uphof, plant breeder, Nederlandsche Élitezaad Maatschappij. Received March 23, 1921. Quoted notes by Mr. Uphof. Other notes adapted from *Groninger Zaaizaadvereeniging, January 5, 1921.*

52835. AVENA SATIVA L. Poaceæ. Oats.

"*Zegehaver.*"

This variety, *Svalofs-Zegehaver*, has replaced nearly all the white varieties formerly cultivated in Groningen, it produces an abundance of long straw which withstands lodging, and large grain, and has a large weight per hectoliter. This variety thrives best in fairly rich soil.

52836 and 52837. BETA VULGARIS L. Chenopodiaceæ. Beet.

52836. "*Mangelwurzel-Barres.*"

Barres van Sludstrup. First and second crops from seed of a variety imported from Denmark. The yield of reddish brown medium-long beets is very high.

52837. "Sugar beet, improved by the Netherlands Élite Seed Co."

52838 and 52839. HORDEUM DISTICHON PALMELLA Harlan. Poaceæ. Barley.

52838. "*Chevalier.*"

For previous introductions, see S. P. I. No. 5842.

52839. "*Princesse.*"

Svalofs Princessegerst. A variety with medium-long and very leafy straw, full grain, and very wrinkled husk. The yield is very good.

52840. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. Barley.

"*Oldambtster wintergerst* (Oldambtster winter barley)."

52841. MELICOCCA BIJUGA L. Sapindaceæ. **Genip.**

From Nassau, New Providence, Bahamas. Plants presented by Neville D. Sands, secretary, Board of Agriculture. Received February 21, 1921.

"A dicœcious tree common in the West Indies and sometimes called 'Spanish lime.' It reaches 20 to 25 feet in height and has light-green compound leaves, with clusters of small white flowers in early spring. The fruit, which ripens in August, has a brittle shell covering the acid edible pulp which incloses the large seed." (*Sands.*)

"One of the local names of this tree is 'honeyberry.' It is cultivated for its edible fruit in the West Indies, Brazil, and Paraguay. The seeds are rich in starch and are used as we use the chestnut in the United States." (*W. W. Stockberger.*)

For previous introduction, see S. P. I. No. 44883.

52842 to 52844. TRITICUM AESTIVUM L. Poaceæ.
(*T. vulgare* Vill.) **Common wheat.**

From Bussum, Netherlands. Seeds presented by J. C. Th. Uphof, plant breeder, Nederlandsche Élitezaad Maatschappij. Received March 23, 1921. Quoted notes by Mr. Uphof. Other notes adapted from *Groninger Zaaizaadvereeniging, January 5, 1921.*

52842. "*Imperiaal.*"

A new variety from the Instituut voor veredeling van landbouwgewassen (Institute for improvement of agricultural crops). (*Groninger Zaaizaadvereeniging, Aug. 22, 1919.*)

52843. "*Japhet zomertarwe* (Japhet summer wheat)."

A variety with stiff straw, red grain, and white chaff. Of all varieties of summer wheat this has proved the best so that it has nearly replaced all other varieties. In Groningen it is used nearly as much for summer as for winter wheat. On many soils it gives approximately nearly as high yield as winter wheat. The soil requirements are similar to those of oats. The seeds require early sowing and must be treated with formalin before sowing.

52844. "*Millioen* (Million)."

52845 to 52848. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Groningen, Netherlands. Tubers presented by C. Broekema, director, Groninger Zaaizaadvereeniging. Received March 31, 1921. Quoted notes by Mr. Broekema.

52845. "*Bravo.* Grown by Mr. Veenhuigen, and known as an excellent winter potato in which very few black ones are present after storage. The yield is up to 400 hectoliters per hectare."

52846. "*Eigenheimer.* A very good potato which grows in clay and sandy soils."

An early yellow-fleshed variety good for table use and resistant to Phytophthora.

For previous introduction, see S. P. I. No. 12597.

52847. "*Groningen Kron.* An extraordinarily good potato of high yield, recommended for winter storage. Originated by Mr. Velhuis at Oosterhoogebrug."

52848. "*Roode Star.* A well-known potato, but more susceptible to diseases than *Groningen Kron* and *Bravo*, which are not so well known."

52849 to 52851.

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received March 28, 1921.

52849. AMYGDALUS DAVIDIANA (Carr.) Zabel. Amygdalaceæ.
(*Prunus davidiana* Franch.)

For stock experiments.

For previous introduction and description, see S. P. I. No. 36807.

52850. DIOSPYROS LOTUS L. Diospyraceæ.

For stock experiments.

For previous introduction and description, see S. P. I. No. 44535.

52851. PYRUS USSURIENSIS Maxim. Malaceæ. **Pear.**

For stock experiments.

For previous introduction and description, see S. P. I. No. 47301.

52852 and 52853. RUBUS IDAEUS L. Rosaceæ.

European raspberry.

From Wimborne, England. Plants presented by J. J. Kettle, Corfe Mullen. Received March 11, 1921.

52852. "*Perfection.*" (*Kettle.*)

52853. "*Lloyd George Perpetual.*" (*Kettle.*)

52854. COCOS NUCIFERA L. Phœnicaceæ. **Coconut.**

From Buitenzorg, Java. Seeds presented by Dr. I. Boldingh, acting head of the Division of Plant Breeding, Java Department of Agriculture. Received March 29, 1921.

"*Klappa-guding.*" (Boldingh.)

INDEX OF COMMON AND SCIENTIFIC NAMES.

Abies faxoniana, 52622.
recurvata, 52624.
sibirica nephrolepis, 52623.
Acacia sp., 52333.
pendula, 52800.
tortilis, 52619.
Adonis vernalis, 52495.
Aesculus indica, 52625.
Aextoxicon punctatum, 52586.
Agati grandiflora, 52307.
Aleurites moluccana, 52449, 52755.
triloba. See *A. moluccana*.
Alfalfa, *Medicago sativa*, 52612.
Allium ascalonicum, 52310.
cepa, 52311.
fistulosum, 52312–52314.
Amygdalus davidiana, 52604, 52662, 52849.
persica, 52339, 52340.
Anacardium occidentale, 52581, 52582.
Ananas sativus, 52492.
Andropogon minarum, 52741.
Annona cherimola, 52375.
reticulata, 52745.
senegalensis, 52806.
Apple. See *Malus* spp.
Apricot, *Prunus armeniaca*, 52578, 52739.
Arachis hypogaea, 52343, 52344.
Aralia cachemirica, 52669, 52788.
Arbol de la Cruz, *Brownea grandiceps*, 52308.
Arundinaria auricoma, 52670.
fastuosa, 52671.
fortunei, 52672.
pumila, 52673.
pygmaea, 52674.
Arundo mauritanica. See *A. plinii*.
plinii, 52566.
Astragalus sp., 52617.
Athel, *Tamarix aphylla*, 52534.
Avena sativa, 52515, 52516, 52818–52822, 52835.
Avicennia officinalis, 52754.
Babaco, *Carica* spp., 52574, 52721.
Bamboo, *Arundinaria* spp., 52670–52674.
Phyllostachys flexuosa, 52686.
Banana, *Musa* sp., 52571.
Barberry. See *Berberis* spp.
Barley. See *Hordeum* spp.
Bauhinia, sp., 52747.
malabarica, 52746.
Bean, bonavist, *Dolichos lablab*, 52363.
broad, *Vicia faba*, 52744, 52831–52834.
Lima, *Phaseolus lunatus*, 52775.
soy, *Soja max*, 52345–52349.
Beet, *Beta vulgaris*, 52836, 52837.
Berberis spp., 52626–52628.
aggregata, 52454.
brachypoda, 52453.
brevipaniculata, 52336.
Berry, Andes, *Rubus glaucus*, 52717, 52733, 52734.
Beta vulgaris, 52836, 52837.
Blackberry, *Rubus* spp., 52773, 52816.
Bombax insigne, 52748.
Bor, *Ziziphus mauritiana*, 52417.
Boree, *Acacia pendula*, 52800.
Brassica oleracea botrytis, 52602.
Brownea grandiceps, 52308.
Buddleia davidii, 52675.
variabilis. See *B. davidii*.
Bullock's-heart. See Custard-apple.
Bunchosia armeniaca, 52715.
Byrsonima crassifolia, 52530.

Caesalpinia pectinata, 52587.
tinctoria. See *C. pectinata*.
Caldcluvia paniculata, 52588.
Callitris whytei, 52807.
Calophyllum inophyllum, 52595.
Canarium rufum, 52399.
Canavali obtusifolium, 52400.
Capulin, *Prunus serotina*, 52579, 52720.

Caragana sp., 52700.
arborescens, 52451, 52690, 52691.
cuneifolia, 52692.
boisi, 52452, 52629.
frutex, 52693–52695.
grandiflora, 52696.
microphylla, 52697.
pygmaea, 52698.
sibirica, 52699.
Carica spp., 52309, 52574, 52716, 52721.
papaya, 52620, 52810.
Cashew, *Anacardium occidentale*, 52581, 52582.
Cassia eremophila, 52353.
grandis, 52401.
nodosa, 52797.
occidentalis, 52599.
Castanea diversifolia, 52387, 52436.
Castanopsis argentea, 52533.
Cauliflower, *Brassica oleracea botrytis*, 52602.
Chamburo, *Carica* sp., 52716.
Chaulmoogra tree, *Taraktogenos kurzii*, 52803.
Chayota edulis, 52467, 52804.
Chayote, *Chayota edulis*, 52467, 52804.
Chenopodium bonus-henricus, 52789.
Cherimoya, *Annona cherimola*, 52375.
Cherry, flowering, *Prunus serrulata*, 52663.
Chivo, *Duranta triacantha*, 52575, 52610.
Chipilín, *Crotalaria striata*, 52531.
Cholán, *Delostoma roseum*, 52608, 52609.
Ciruela verde, *Bunchosia armeniaca*, 52715.
Citrus decumana. See *C. grandis*.
grandis, 52388, 52389.
sinensis, 52799.
Clematis buchaniana, 52676.
montana rubens, 52630.
tangutica, 52631.
obtusiuscula, 52337.
Clover, cluster, *Trifolium glomeratum*, 52356.
red, *Trifolium pratense*, 52601.
subterranean, *Trifolium subterraneum*, 52335.
Cochlospermum hibiscoides. See *Maximilianea vitifolia*.
Coconut, *Cocos nucifera*, 52854.
Cocos nucifera, 52854.
Coigüe, *Nothofagus dombeyi*, 52592.
Colocasia esculenta, 52332.
Corn, *Zea mays:*
Maiz negro, 52616.
amarillo, 52719.
Morocho blanco, 52718.
Cornus walteri, 52702.
Corylus avellana, 52354, 52355.
Corypha umbraculifera, 52802.
Cotoneaster spp., 52632–52639.
dammeri radicans, 52677.
Cotton, *Gossypium* sp., 52438.
Gossypium barbadense:
Ashmouni, 52812.
Assili, 52813.
Sakel, 52814.
Zagora, 52815.
tree, *Bombax insigne*, 52748.
Gossypium arboreum, 52384.
Coyo, *Persea schiedeana*, 52787.
Crab apple, *Malus sikkimensis*, 52684.
Crataegus azarolus, 52362.
crenulata. See *Pyracantha crenulata*.
Crotalaria striata, 52531.
Cuperi algaroba, *Prosopis* sp., 52505.
Currant, *Ribes* spp., 52707–52711.
Currebau-sevil, *Piptadenia cebil*, 52504.
Custard-apple, *Annona reticulata*, 52745.
Cyamopsis psoraloides. See *C. tetragonoloba*.
tetragonoloba, 52785, 52786.
Cycas sp., 52402.
Cyphomandra betacea, 52740.
Cypress, Milanji, *Callitris whytei*, 52807.

Datura sp., 52793.
innoxia, 52584, 52585.
metel, 52330, 52422–52424.
sanguinea, 52607, 52735.
stramonium, 52790–52792.
Davidsonia pruriens, 52352.
Delostoma roseum, 52608, 52609.
Deutzia spp., 52455, 52641, 52642.
discolor, 52678.
schneideriana laxiflora, 52640.
Digitaria exilis, 52736.
Dioscorea alata, 52507.
Diospyros ebenaster, 52377.
lotus, 52796, 52850.
mollis, 52510.
Dolichos lablab, 52363.
Duranta triacantha, 52575, 52610.

Echium violaceum, 52357.
Elaeocarpus sp., 52403.
siamensis, 52437.
Elymus arenarius, 52794.
Eriogonum wrightii subscaposum, 52509.
Eucryphia cordifolia, 52589.
Eugenia uniflora, 52569.
Euphorbia sp., 52398.
Euterpe sp., 52331.

Fagus dombeyi. See *Nothofagus dombeyi*.
obliqua. See *Nothofagus obliqua*.
procera. See *Nothofagus procera*.
Ficus spp., 52404–52410.
carica, 52598.
glomerata, 52496.
Fig. See *Ficus* spp.
Filbert, *Corylus avellana:*
Précoce de Frauendorf, 52354.
Princesse royale, 52355.
Fir. See *Abies* spp.
Flacourtia indica, 52411.
ramontchi. See *F. indica*.
Flax. See *Linum* spp.
Flindersia maculosa, 52798.
Flor morado, *Echium violaceum*, 52357.
Forsythia sp., 52643.
Fragaria spp., 52758–52762.
chiloensis, 52576, 52731.
daltoniana, 52679.
moschata, 52756.
nilgerrensis, 52680.
vesca, 52757.

Geijera parviflora, 52801.
Genip, *Melicocca bijuga*, 52841.
Glycine hispida. See *Soja max*.
Good King Henry, *Chenopodium bonus-henricus*, 52789.
Gooseberry, *Ribes cynosbati*, 52706.
Gossypium sp., 52438.
arboreum, 52384.
barbadense, 52812–52815.
Grass, beard, *Andropogon minarum*, 52741.
fundi, *Digitaria exilis*, 52736.
lyme, *Elymus arenarius*, 52794.
mission, *Pennisetum setosum*, 52743.
molasses, *Melinis minutiflora*, 52742.
plume, *Miscanthus condensatus*, 52383.
timothy, *Phleum pratense*, 52666.
Guar, *Cyamopsis tetragonoloba*, 52785, 52786.

Hawthorn, *Crataegus azarolus*, 52362.
Hemerocallis fulva, 52795.
Holcus halepensis × *sorghum*, 52338.
sorghum, 52425, 52426, 52606.
Hordeum distichon palmella, 52618, 52823–52825, 52838, 52839.
vulgare pallidum, 52517–52519, 52840.
Hydnocarpus anthelminthica, 52465. 52468.
castanea, 52514.
Hydrangea sp., 52703.

Ilex fargesii, 52644.
Inga laurina, 52511.
Ipomoea carnea, 52493.
horsfalliae, 52749.
Irvingia malayana, 52494.

Juglans spp., 52611, 52682, 52683.
intermedia vilmoreana, 52681.
Juniper, *Juniperus thurifera*, 52378.
Juniperus thurifera, 52378.

Kennedia rubicunda, 52367.
Keurboom, *Virgilia capensis*, 52376.

Lagerstroemia spp., 52512, 52750.
Landolphia kirkii, 52583.
Laurel, Alexandrian, *Calophyllum inophyllum*, 52595.
Chilean, *Laurelia sempervirens*, 52590.
Laurelia aromatica. See *L. sempervirens*.
sempervirens, 52590.
Lavandula spica, 52645, 52646.
Lavender, *Lavandula spica*, 52645, 52646.
Leopard tree, *Flindersia maculosa*, 52798.
Lilac, *Syringa chinensis*, 52713.
Linum spp., 52783, 52784.
africanum, 52776.
alpinum, 52358.
austriacum, 52380.
corymbiferum, 52777.
flavum, 52369, 52381.
grandiflorum, 52359, 52370, 52778.
monogynum, 52364, 52371.
muelleri, 52360.
nervosum, 52779.
pallescens, 52780.

Linum perenne, 52372.
tenuifolium, 52373.
usitatissimum, 52361, 52365, 52366, 52374, 52382, 52774, 52781, 52782, 52826, 52827.
Litchi chinensis, 52701.
Livistona sp., 52466.
Lomatia obliqua. See *Tricondylus obliqua*.
Lonicera sp., 52704.
Lowberry, *Rubus* sp., 52816.
Lumbang, *Aleurites moluccana*, 52449, 52755.
Lupine, white, *Lupinus albus*, 52752.
yellow, *Lupinus luteus*, 52753.
Lupinus albus, 52752.
luteus, 52753.
Lychee, *Litchi chinensis*, 52701.
Lycopersicon esculentum, 52334, 52577.

Mafurra, *Trichilia emetica*, 52811.
Maikrabao, *Hydnocarpus anthelmintica*, 52465, 52468.
Mai khai, *Euphorbia* sp., 52398.
Mai padou, *Pterocarpus macrocarpus*, 52390.
Malus laosensis, 52341.
sikkimensis, 52684.
sylvestris, 52392, 52647, 52667.
Mangifera indica, 52668.
Mango, Pirie, *Mangifera indica*, 52668.
Mangrove, white, *Avicennia officinalis*, 52754.
Maximilianea vitifolia, 52412.
Maiten, *Maytenus boaria*, 52591.
Maytenus boaria, 52591.
Medicago sativa, 52612.
Melicocca bijuga, 52841.
Melinis minutiflora, 52742.
Mimusops sp., 52413.
Mirabel, *Prunus cerasifera myrobalana*, 52580, 52615.
Miscanthus condensatus, 52383.
Mock orange, *Philadelphus* spp:
Chinese, *Philadelphus sericanthus*, 52457.
common, *Philadelphus grandiflorus*, 52456.
hybrid, *Philadelphus lemoinei*, 52649–52657.
Avalanche, 52649.
Bannierii, 52650.
Bouquet blanc, 52651.
Boule d'Argent, 52652.
Mock orange—Continued.
hybrid—Continued.
Candelabra, 52653.
Erectus, 52654.
Manteau d'Hermine, 52655.
Mont Blanc, 52656.
Oeil de pourpre, 52657.
Momordica cochinchinensis, 52497.
Mora de Castilla, *Rubus glaucus*, 52717, 52733, 52734.
Morning-glory. See *Ipomoea* spp.
Mucuna sp., 52414.
Muermo, *Eucryphia cordifolia*, 52589.
Musa sp., 52571.
Myall, *Acacia pendula*, 52800.

Nance, *Byrsonima crassifolia*, 52530.
Nephelium litchi. See *Litchi chinensis*.
Nothofagus dombeyi, 52592.
obliqua, 52593.
procera, 52594.

Oak. See *Quercus* spp.
Oats, *Avena sativa*, 52515, 52516, 52818–52822, 52835.
Onion, *Allium cepa*, 52311.
Welsh, *Allium fistulosum*, 52312–52314.
Orange, Jaffa, *Citrus sinensis*, 52799.
Oryza sativa, 52439, 52751.
Osmanthus delavayi, 52685.

Paeonia lutea, 52648.
Palm, assahy, *Euterpe* sp., 52331.
fan, *Livistona* sp., 52466.
talipot, *Corypha umbraculifera*, 52802.
Papaya, *Carica papaya*, 52620, 52810.
Parinari sp., 52415.
curtellaefolium, 52808.
Pea, garden, *Pisum sativum*, 52805, 52828, 52829.
Peach, *Amygdalus persica*, 52339, 52340.
Peanut, *Arachis hypogaea*, 52343, 52344.
Pear. See *Pyrus* spp.
Pea tree, Siberian, *Caragana* sp. 52451, 52690–52692.
Pennisetum setosum, 52743.
Peony, *Paeonia lutea*, 52648.
Pepper, *Piper* sp., 52572.

Persea schiedeana, 52787.
Phaseolus lunatus, 52775.
Philadelphus grandiflorus, 52456.
lemoinei, 52649–52657.
sericanthus, 52457.
Philesia magellanica, 52596.
Phleum pratense, 52666.
Phyllostachys flexuosa, 52686.
Picea jezoensis, 52658.
schrenkiana, 52659.
Pine, *Pinus canariensis*, 52817.
Pineapple, *Ananas sativus*, 52492.
Pinus canariensis, 52817.
Piper sp., 52572.
Piptadenia cebil, 52504.
Pisum sativum, 52805, 52828, 52829.
Pitanga, *Eugenia uniflora*, 52569.
Plum, Mirabel, *Prunus cerasifera myrobalana*, 52580, 52615.
Poplar. See *Populus* spp.
Populus alba subintegerrima, 52605.
euphratica, 52368.
rasumowskiana, 52705.
Potato, *Solanum tuberosum*:
Bravo, 52845.
Calvache, 52722.
(Colombia), 52315–52317.
Dominga, 52723.
Eigenheimer, 52846.
Groningen Kron, 52847.
Huagrasinga, 52724.
Inglesa, 52725.
Leona, 52726.
Pazmina, 52727.
Manzana, 52728.
(Netherlands), 52520–52522.
Papa criolla, 52316, 52317.
Roode Star, 52848.
Tabla, 52729.
Yungara, 52730.
Prosopis sp., 52505.
Prunus armeniaca, 52578, 52739.
cerasifera myrobalana, 52580, 52615.
davidiana. See *Amygdalus davidiana*.
persica. See *Amygdalus persica*.
serotina, 52579, 52614, 52720.
serrulata, 52663.
Pterocarpus macrocarpus, 52390.
Pummelo, *Citrus grandis*:
Ban Kun Non, 52388.
Nakon Chaisri, 52388.
Thong Dee, 52389.
Pyracantha crenulata, 52687.
Pyrus spp., 52461–52464, 52688.
communis, 52732.
× *lindleyi*, 52567.
malus. See *Malus sylvestris*.
pashia, 52342.
sikkimensis. See *Malus sikkimensis*.
trilobata. See *Sorbus trilobata*.
ussuriensis, 52568, 52851.

Quercus spp., 52442, 52448.
fenestrata, 52444.
ilex, 52506.
junghuhnii, 52440, 52441.
kerrii, 52447.
lindleyana, 52393, 52394.
polystachya, 52395, 52443.
sootepensis, 52396.
thomsoni, 52397, 52445, 52446.
truncata, 52391.

Radal, *Tricondylus obliqua*, 52597.
Radish, *Raphanus sativus*, 52508.
Ramontchi, *Flacourtia indica*, 52411.
Raphanus sativus, 52508.
Raspberry, European, *Rubus idaeus*:
Abundance, 52763.
Baumforth, 52764.
Bountiful, 52765.
Devon, 52766.
Hornet, 52767.
Lloyd George Perpetual, 52853.
Magnum Bonum, 52768.
Merveille de Rouge, 52769.
Norwich Wonder, 52770.
October Red, 52771.
Park Lane, 52490.
Perfection, 52852.
Pyne's Royal, 52491.
Semper Fidelis, 52772.
Rauli, *Nothofagus procera*, 52594.
Regenerador, *Agati grandiflora*, 52307.
Rhododendron chartophyllum, 52460.
racemosum, 52603, 52621.
Ribes cynosbati, 52706.
longeracemosum, 52707.
petraeum, 52708.
caucasicum, 52709.
ussuriense, 52710.
vilmorini, 52711.
Rice, *Oryza sativa*, 52439, 52751.
Roble, *Nothofagus obliqua*, 52593.
Rosa beggeriana, 52458.
Rose, *Rosa beggeriana*, 52458.

Rubus spp., 52660, 52661, 52773, 52816.
glaucus, 52717, 52733, 52734.
idaeus, 52490, 52491, 52763–52772, 52852, 52853.

Saccharum officinarum, 52350, 52351, 52427–52435, 52469–52489, 52535–53545, 52664, 52665.
Sapote, black, *Diospyros ebenaster*, 52377.
Sechium edule. See *Chayota edulis*.
Sesbania grandiflora. See *Agati grandiflora*.
Shallot, *Allium ascalonicum*, 52310.
Sindora sp., 52513.
Soja max, 52345–52349.
Solanum mammosum, 52385.
tuberosum, 52315–52317, 52520–52522, 52722–52730, 52845–52848.
Sorbus trilobata, 52600.
Sorghum, *Holcus halepensis*×*sorghum*, 52338.
Holcus sorghum, 52425, 52426, 52606.
Sorghum vulgare. See *Holcus sorghum*.
Spelt, *Triticum spelta*:
Abdessalem, 52546.
Ali ben Maklouf, 52550.
Bhamoud, 52547, 52548.
El Harcha, 52549.
Lebbaga, 52551.
Masraf, 52552.
Spiraea myrtilloides, 52459, 52712.
Spirea, *Spiraea myrtilloides*, 52459, 52712.
Spruce. See *Picea* spp.
Stachys sieboldi, 52306, 52379.
Sterculia sp., 52416.
Strawberry, *Fragaria* spp.:
Chilean, Ambato, 52576, 52731.
garden, International, 52758.
King George V., 52759.
La Perle, 52760.
Maincrop, 52761.
White Perpetual, 52762.
hautbois, Royal, 52756.
Himalayan, 52679.
Nilghiri, 52680.
wood, Red Alpine, 52757.
Sugar cane, *Saccharum officinarum*:
Christal, 52427.
D–74, 52428–52430.
Demerara 109, 52351.
Sugar cane—Continued.
Demerara 433, 52350.
Florida Green, 52431.
H 10.028, 52538.
H 11.027, 52469.
H 11.050, 52470.
H 15, 52471.
H 144, 52472.
H 219, 52473.
H 289, 52474.
H 598, 52475.
H 1304, 52540.
H 1418, 52476, 52541.
H 1419, 52542.
H. 4121, 52478, 52543.
H 4124, 52479, 52535.
H 6047, 52480.
H 6112, 52481.
H 6113, 52482.
H 6241, 52483, 52536.
H 6142, 52484.
H 6286, 52485.
H 6296, 52486, 52537.
H 9029, 52544.
H 9050, 52487.
H 9092, 52488, 52545.
H 9176, 52489.
J 213, 52664.
Java 51, 52539.
Kassoer, 52665.
Kavangire, 52433.
P. R. 260, 52434.
P. R. 292, 52435.
Syringa chinensis, 52713.

Tacsonia tripartita, 52613.
Taiwania cryptomerioides, 52570.
Tamarix aphylla, 52534.
articulata. See *T. aphylla*.
Tara, *Caesalpinia pectinata*, 52587.
Taraktogenos kurzii, 52803.
Taro, *Colocasia esculenta*, 52332.
Telfairia pedata, 52450.
Thespesia lampas, 52386.
Tiaca, *Caldcluvia paniculata*, 52588.
Timothy, *Phleum pratense*, 52666.
Tique, *Aextoxicon punctatum*, 52586.
Tocte, *Juglans* sp., 52611.
Tomato, *Lycopersicon esculentum*, 52334, 52577.
Tree-tomato, *Cyphomandra betacea*, 52740.
Triaca, *Caldcluvia paniculata*, 52588.
Trichilia emetica, 52811.

Tricondylus obliqua, 52597.
Trifolium glomeratum, 52356.
pratense, 52601.
subterraneum, 52335.
Triticum aestivum, 52318–52327, 52498–52502, 52523–52529, 52553–52565, 52737, 52738, 52830, 52842–52844.
spelta, 52546–52552.
turgidum, 52328, 52329, 52503.
vulgare. See *T. aestivum*.

Undetermined, 52418–52421, 52573, 52809.

Viburnum sp., 52714.
sieboldii, 52689.
Vicia faba, 52744, 52831–52834.
Virgilia capensis, 52376.

Walnut. See *Juglans* spp.
Wattle, *Acacia* spp., 52333, 52800.
Wheat, *Triticum aestivum:*
common, Addens, 52523.
Bahtane, 52553.
Baroudi, 52554.
Benefactor, 52318.
Blé de Chine No. 1, 52737.
Blé de Chine No. 2, 52738.
Essex Conqueror, 52319.
Diekhuis I, 52524.
El Moumena, 52555.
Ferek, 52556.
Hard Federation Selections, 52557–52565.
Iduma Red, 52320.
Imperiaal, 52842.
Wheat, *Triticum aestivum*—Continued.
common Japhet zomertarwe, 52830, 52843.
Improved Double Stand-Up White, 52321.
John Bull, 52322.
Little Joss, 52323.
Marshal Foch, 52324.
Millioen, 52844.
Millioen III, 52525.
Pantso, 52526.
Reselected Victor White, 52325.
Snowdrop White, 52326.
White Marvel, 52327.
Wieb, 52527.
W. & E. P., 52528.
W. & W. D. 14, 52529.
Yeoman C., 52498.
Yeoman F., 52499.
Yeoman H., 52500.
Yeoman S., 52501.
Yeoman Y., 52502.
poulard, *Triticum turgidum:*
Early Red Cone, 52329.
Hati, 52503.
Percival's Red Cone, 52328.
Widdringtonia whytei. See *Callitris whytei*.
Wilga, *Geijera parviflora*, 52801.

Xanthosoma sp., 52532.

Yam, *Dioscorea alata*, 52507.
Yautia, *Xanthosoma* sp., 52532.

Zea mays, 52616, 52718, 52719.
Ziziphus mauritiana, 52417.

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
15 CENTS PER COPY

PURCHASER AGREES NOT TO RESELL OR DISTRIBUTE THIS COPY FOR PROFIT.—PUB. RES. 57, APPROVED MAY 11, 1922

▽

Issued October, 1923.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1921.

(No. 67; Nos. 52855 to 53895.)

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1923.

ADDITIONAL COPIES

OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT

15 CENTS PER COPY

PURCHASER AGREES NOT TO RESELL OR DISTRIBUTE THIS COPY FOR PROFIT.—PUB. RES. 57, APPROVED MAY 11, 1922

CONTENTS.

	Page.
Introductory statement	1
Inventory	6
Index of common and scientific names	95

ILLUSTRATIONS.

		Page.
PLATE	I. A hard-shelled passion fruit from tropical America. (*Passiflora maliformis* L., S. P. I. No. 53180)	36
	II. The parent tree of the Carchi avocado. (*Persea americana* Mill., S. P. I. No. 53185)	36
	III. The Carchi avocado, a variety of the Mexican race. (*Persea americana* Mill., S. P. I. No. 53185)	36
	IV. The Yungara potato, one of the best varieties of the Ecuadorian highlands. (*Solanum tuberosum* L., S. P. I. No. 53195)	36
	V. The higacho, an Andean relative of the papaya. (*Carica chrysopetala* Heilborn, S. P. I. No. 53754)	86
	VI. Akala, a giant Hawaiian raspberry. (*Rubus macraei* A. Gray, S. P. I. No. 53847	86
FIGURE	1. Map of Burma, Assam, and Siam, showing the route followed by J. F. Rock in his successful hunt for the true chaulmoogra tree	IV

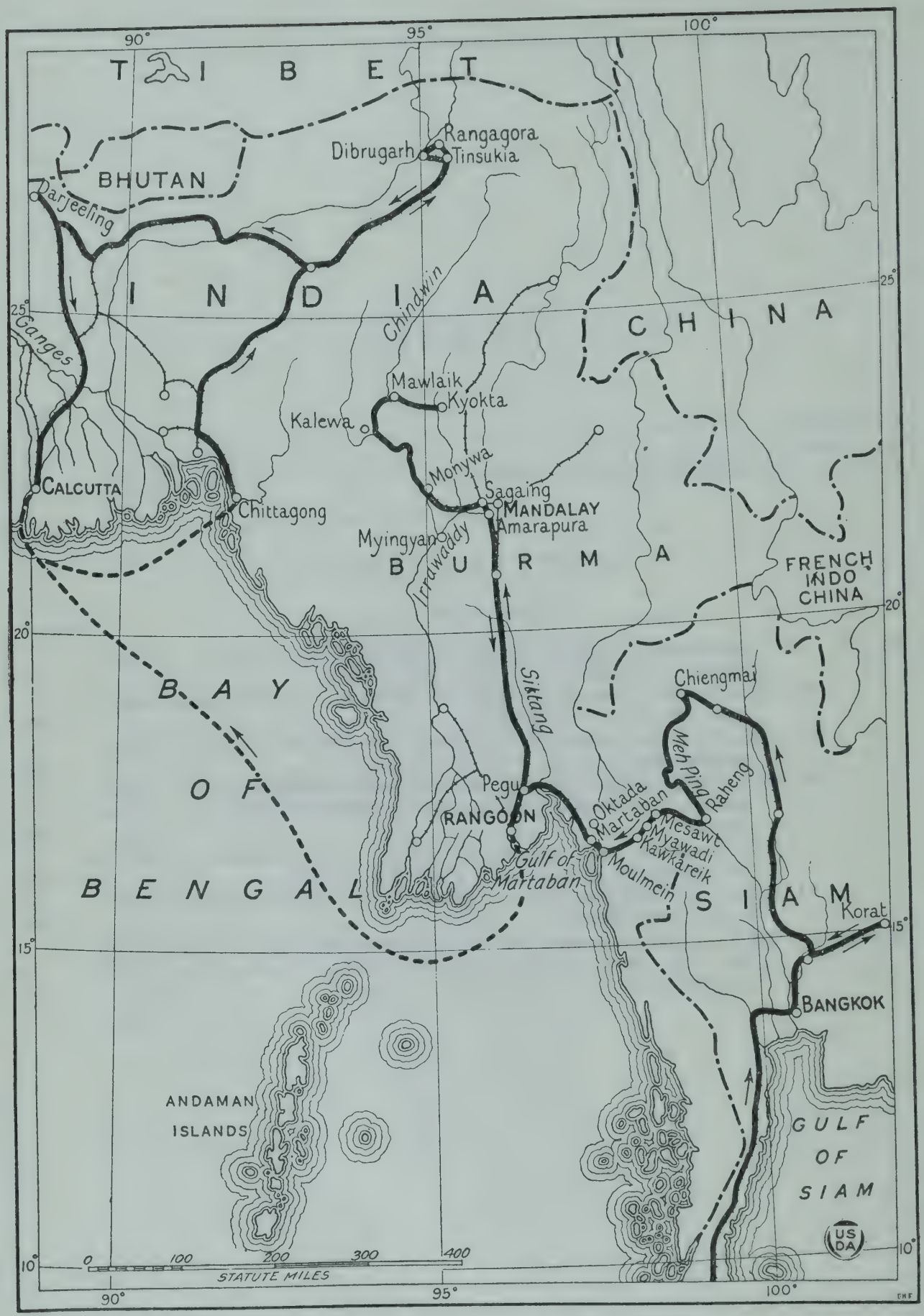


FIG. 1.—Map of Burma, Assam, and Siam, showing the route followed by J. F. Rock in his successful hunt for the true chaulmoogra tree, which yields the oil now considered a specific for leprosy. A large part of the country explored was practically unknown botanically. The first authentic photographs ever made of the true chaulmoogra tree and its relatives, which Mr. Rock succeeded in obtaining, have served to clear up the confusion existing as to the source of this exceedingly important product.

INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1921 (NO. 67; NOS. 52855 TO 53895).

INTRODUCTORY STATEMENT.

This sixty-seventh inventory contains a part of the plant collections made by our Agricultural Explorer Wilson Popenoe in the highlands of Ecuador. These collections represent real exploration work of a strenuous and dangerous character in a country through which no one travels easily and in the remote regions of which most trying hardships—poor food, almost impassable roads, and malaria—are constant companions of the explorer. To penetrate into these regions, to bring out collections of living plants, and to land them successfully in the United States is a feat which deserves special mention, for it must not be forgotten that in some portions of this tropical country the hardships of travel have changed very little since the days when Robert Spruce visited them in search of the cinchona tree.

The collection consists of 47 species of plants carefully selected from the hundreds of curious and interesting species which compose the flora of Ecuador. Because of Mr. Popenoe's wide acquaintance with the horticultural plants in America, particularly those suited to the warmer parts of it, these should have a special interest to the experimenters who will read these descriptions. Owing to the difficulty of identifying Ecuadorian plants many of the species here described are not yet botanically classified further than as to their genera. The collections are numbered S. P. I. 53177 to 53217, 53485, and 53754 to 53758.

Among the more interesting plants from Ecuador are the Chota Valley avocados (Nos. 53182 to 53185 and 53895), which belong to the Mexican race but are unusually large and of excellent quality. These provide a strain of this hardy Mexican race which hitherto has not been tried in this country.

The discovery of the presence of the potato disease, *Phytophthora infestans*, in this the very home of the cultivated potato, which fact has been abundantly established by Professor Pachano, removes the mystery of the origin of this disease, which has puzzled pathologists for many years. Differences in the susceptibility of the different sorts were observed, but no resistant strains appear to be known there, although excellent varieties were secured and introduced (Nos. 53187 to 53197).

The Ecuadorian walnut, *Juglans* sp. (No. 53198), called there tocte, appears to be a valuable nut and forest tree.

A true sweet corn (No. 53217) from 7,000 feet altitude may indicate to the plant breeder the origin of the sweet corns of our gardens and may be useful in producing a variety for our own warmer regions.

Two promising new species of Rubus of good quality (*R. roseus*, No. 53218, and *R. adenotrichos*, No. 53219); a beautiful Andean barberry, *Berberis quinduensis* (No. 53177); the hard-shelled passion fruit, *Passiflora maliformis* (No. 53180), of promise for California; the quiqui, *Osteomeles obtusifolia* (No. 53485), a new tropical hawthornlike shrub which has been used as a stock for the apple in Ecuador; and the higacho, *Carica chrysopetala* (No. 53754), which resembles the mountain papaya, *Carica candamarcensis*, but is specifically distinct and may contribute material for the breeding problem of producing a small sweet-fruited papaya which can be shipped like a tomato or an avocado; are some of the plants which Mr. Popenoe found and introduced.

While Mr. Popenoe was carrying out a difficult piece of exploration work in Ecuador, Joseph F. Rock, our newly appointed agricultural explorer, was searching for the source of chaulmoogra oil in Siam and Burma. This oil, or rather the ethyl esters of its constituent chaulmoogric acid, which were originally discovered and described by Dr. Frederick B. Power, has come into great prominence as a cure for leprosy through the researches of Doctor Dean and his collaborators in Honolulu. The source of the oil, which comes into commerce through Burma, was quite obscure when Mr. Rock first took up the study of these trees and was commissioned as an agricultural explorer to investigate the whole subject; no photographs had ever been made of them. He spent several months in the jungles of Siam and Burma and went through experiences quite as thrilling and dangerous as any to which explorers in tropical countries are liable, including a unique one with a man-eating tiger. In the course of his explorations (fig. 1) he traversed the northern mountainous part of Siam, bordering on Burma, which had not previously been visited by botanists. Not only has he in large measure solved the problem of the source of chaulmoogra oil, but he obtained seeds of the true chaulmoogra tree (*Taraktogenos kurzii*, No. 53844) and of the more important allied trees, including *Hydnocarpus wightiana* (No. 52859) and also *H. castanea* and *H. anthelminthica* (recorded in Inventory No. 66 under Nos. 52514 and 52465), as well as the false chaulmoogra tree, *Gynocardia odorata* (No. 53121), which for years was erroneously supposed to be the source of chaulmoogra oil. Though Mr. Rock's main quest was the chaulmoogra trees—which quest he has described in Department Bulletin No. 1057, entitled "The Chaulmoogra Tree and Some Related Species," and in the National Geographic Magazine for March, 1922—he nevertheless obtained seeds of other trees and plants of great interest to those whose climatic surroundings will permit their cultivation.

The success of the bor (*Ziziphus mauritiana*) on the calcareous soils of southern Florida makes those who are already interested in this new fruit anxious to compare with the plants sent in from Mauritius Rock's variety (No. 52858) from the upper Chindwin River of Burma.

Plant breeders who are trying to produce larger and finer fruited varieties of blackberries and raspberries can not fail to be interested in the strains of the Hawaiian species of Rubus (*R. macraei*, Nos. 53480 to 53482, 53625, 53759, 53760, and 53847). The problem will be to find a suitable moist, cool, but not too cold, climate in which to grow both these Hawaiian and Mr. Popenoe's Ecuadorian species of Rubus.

The brilliant-berried *Vaccinium meyenianum* (No. 53488), from the volcano of Kilauea, and the showy white-flowered *Fagraea auriculata* (No. 53483), as well as the forest tree *Sterculia macrophylla* (No. 53484), which Mr. Rock introduced, will, it is hoped, find places in this country.

An unusual number of valuable species has been presented to the department by foreign institutions and by interested foreign amateurs, to whose generosity we have always been indebted in the past.

The Hon. Vicary Gibbs, of Herts, England, has sent us 21 varieties of the beautiful aster (*Aster novi-belgii*, Nos. 53009 to 53029), some of which are sure to beautify the dooryards of this country.

Victor O. Fletcher, of Hobart, Tasmania, has sent four new grasses (Nos. 53115 to 53118) that are proving valuable for forage on the dry hills of Tasmania, where the rainfall totals only 14 inches annually.

Sir David Prain, director of the Royal Botanic Gardens at Kew, has favored us with 19 new or rare species of Rubus (Nos. 52939 to 52951 and Nos. 53535 to 53540) and a very unusual collection of Berberis, Lonicera, Clematis, Rosa, Viburnum, and Cotoneaster (Nos. 53627 to 53752).

Consul Cavin, of Tananarive, Madagascar, presents a remarkable collection of the coffee species now recognized by botanists as distinct (Nos. 53454 to 53462).

Consul Goding, of Guayaquil, sends in a salmon-pink shaddock, or grapefruit (No. 53611).

Through the kindness of Messrs. Kenoyer and Dudgeon, of Ewing Christian College at Allahabad, India, we have come into possession of a remarkable collection of Indian tree and shrub seeds (Nos. 53563 to 53590). This includes *Bauhinia vahlii* (No. 53567), which they say is put to more uses than almost any other forest plant except the bamboo. It is a gigantic climber with white flowers turning to cream color and large flat leaves which are sewed together to make plates, cups, and even rough tablecloths, umbrellas, cloaks, and rain capes. It has grown well in southern Florida in Charles T. Simpson's hammock. The collection also contains *Boswellia serrata* (No. 53569), the source of Indian olibanum, used as an ingredient in incense; *Diospyros tupru* (Nos. 53572 and 53573), a tropical persimmon tree as yet not cultivated in India; nine flowering trees of promise for Florida (Nos. 53574 to 53582); two stately trees (*Sterculia urens*, No. 53588, and *Terminalia tomentosa*, No. 53589) suitable for street use; a variety of purple-stemmed wheat from the Ganges Valley (No. 53590); and a species of jujube (*Ziziphus xylopyrus*, No. 53593), the charred fruits of which make a black dye for leather.

John McLaren, superintendent of Golden Gate Park, San Francisco, has contributed a new ornamental Chilean shrub with small edible fruits possessing a raspberry flavor, *Eugenia luma* (No. 53591).

Benito Carrasco has sent in a plant for covering bare arid soils, which produces ivory-white berries with a pineapple flavor, *Salpichroa rhomboidea* (No. 53608).

Friends of P. H. Rolfs will watch with interest the growth of two new grasses from Minas Geraes, Brazil (*Axonopus* sp., No. 52917, and *Brachiaria plantaginea*, No. 52918); the former, he finds, covers the ground there more densely than does the best St. Augustine grass, being very persistent and crowding out everything else.

Before he was wounded and obliged to return to America, the noted naturalist, George K. Cherrie, of the American Museum of Natural History in New York, sent in some seeds of a remarkable blackberry (*Rubus* sp., No. 53545) which he discovered on the Zamora River in Ecuador at an altitude of 5,500 feet. Of it he remarks, "I do not believe I have ever seen such tremendous clusters of berries. The latter are large and to me very fine flavored."

P. J. Wester, to whom we are indebted for many Philippine plants, presents in this inventory a new and practically seedless variety of the mabolo, a tropical persimmon (*Diospyros discolor*, No. 53555), which is sweeter, more juicy, and of better flavor than the ordinary sort and ought to be distributed throughout the Tropics.

Doctor Proschowsky, of Nice, France, whom few correspondents have equaled in generosity, has added to his gifts the wild apple from the high plateau of Indo China (*Malus laosensis*, No. 52900). Since this grows into a large tree and produces fruit similar in shape, color, and flavor to certain cider pears of Normandy, but grows wild in the dense forests of Indo China, it may possibly prove valuable either as a stock or in the creation of an apple which can be grown in southern latitudes. The wild apple (*Malus doumeri*, No. 53008), which Mr. Miéville, of the Agricultural Station at Chieng Khuang, sent in from Laos, Indo China, may prove similarly useful.

P. C. Standley, of the National Museum, has recently described a tropical persimmon (*Diospyros conzattii*, No. 53176), which produces fruit superior, in his opinion, to that of *D. ebenaster*, and resembles somewhat the delicious sapodilla. It may prove suitable for cultivation in parts of Florida, Hawaii, and Porto Rico.

The spiny palms of the genus Acrocomia have proved to be very rapid growers in southern Florida, some of them equaling the coconut in this respect when planted on pinelands. In view of its ability to withstand severe drought, its hardiness, and the value of its kernels, the macauba palm (*Acrocomia sclerocarpa*, No. 53487), which Thomas R. Gwynn has sent in from Paraguay, would appear to be a most desirable introduction.

The fundi grass of Nigeria (*Digitaria exilis*, No. 53486) Professor Piper reports has proved remarkably promising for forage in the Southern States.

The apricot of Harput, Syria (No. 52914), which grows to be as large as a peach and possesses a remarkable flavor, deserves to be tried in California.

The rapid-growing timber tree of China (*Catalpa bungei*, No. 52909), which Frank N. Meyer reported as growing to 100 feet in height and 15 feet in diameter and furnishing a light, strong, durable, and nonwarping timber resembling walnut, has shown itself at home in Maryland and deserves to be widely tried in those regions where the chestnut blight has destroyed the American chestnut trees.

Dendrocalamus strictus (No. 53610), the forest bamboo of India, which grows to a height of 100 feet and, unlike most other species, produces seeds in abundance, deserves to be widely grown throughout the regions warm enough for its culture.

Hydrangea petiolaris (No. 52937) is a remarkable deciduous climber which is ideal for covering the trunks of old dead trees and is serviceable—like the Japanese ivy—for screening rock and brick walls.

The palangi (*Brassica rugosa*, No. 53542), an early cold-weather crop growing in the hills of the central, eastern, and western Himalayas and cultivated in Nepal, may be worthy of special study. The leaves of its loose head are plucked and eaten as fast as they develop, and an oil is extracted from its seeds. Has any plant breeder worked with this species?

As illustrating a new reason for introducing foreign plants, special attention might be called to the collections of grasses, barberries, legumes, borages, etc., which have been received from Sweden, Denmark, and Holland for the use of the pathologists of the department who are engaged in studying the great problem of controlling the rusts of cereals. These rusts have stages in which they inhabit as secondary hosts a variety of plants, notably the barberries.

The botanical determinations of seeds introduced have been made and the nomenclature determined by H. C. Skeels, and the descriptive and botanical notes have been arranged by G. P. Van Eseltine, who has had general supervision of this inventory. Miss Patty Newbold has assisted in the compilation of descriptive notes.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., November 29, 1922.

INVENTORY.[1]

52855 to 52858.

From Burma, India. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received April 4, 1921. Quoted notes by Mr. Rock.

52855. CANAVALI sp. Fabaceæ.

"*Tayok Pedalet.* Native to Upper Burma. This bean is extensively cultivated in Mandalay and is considered to contain a higher percentage of nitrogen than any other bean found in India or Burma."

52856. HIBISCUS sp. Malvaceæ.

"*Ma ha ka.* A Siamese plant from the forests near Lampang, northern Siam. A beautiful large-flowered scandent bush. Tubers of this plant were sent from Chiengmai."

52857. PHASEOLUS CALCARATUS Roxb. Fabaceæ. **Rice bean.**

"*San to hai.* A bean indigenous to Upper Burma and cultivated in Mandalay. The beans are eaten with rice when mature. Collected February 3, 1921."

52858. ZIZIPHUS MAURITIANA Lam. Rhamnaceæ. **Bor.**
(*Z. jujuba* Lam., not Mill.)

"A shrub with small, red, sweet-acid fruits the size of a large cherry, from a wild plant found near Okma on the upper Chindwin River. Specimen No. 843. Collected February 1, 1921."

For previous introduction, see S. P. I. No. 46720.

52859. HYDNOCARPUS WIGHTIANA Blume. Flacourtiaceæ.

From Calcutta, India. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received April 15, 1921.

"(Calcutta, India. March 8, 1921.) These seeds were found in old fruits under two trees about 30 feet high which were loaded with immature fruits. I examined a number of these seeds and found that they were still in good condition. They will require sandy soil. At present the oil from the seeds is used in Calcutta (School of Tropical Medicine) in the treatment of leprosy." (*Rock.*)

For previous introduction, see S. P. I. No. 51362.

52860. PEUCEDANUM OSTRUTHIUM (L.) Koch. Apiaceæ.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received April 5, 1921.

A perennial herb native to the French Alps. The acid aromatic root is used in medicine, particularly in veterinary practice. It is utilized also for the preparation of some kinds of Swiss cheese. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 366.*)

---

[1] All introductions consist of seeds unless otherwise noted.
It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction; and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

52861 and 52862.

From San Jose, Costa Rica. Seeds presented by Sr. A. Tonduz. Received April 11, 1921.

52861. CANAVALI PLAGIOSPERMA Piper. Fabaceæ.

"From the gardens of Sra. Amparo de Zeledon, Puntarenas." (*Tonduz.*)

A species based on specimens grown from seeds received from Mauritius in 1913; also received from Nicaragua in 1917. The seed resembles the sword bean in appearance, but it has the short hilum of the jack bean.

52862. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"From the gardens of Sra. Amparo de Zeledon, Puntarenas." (*Tonduz.*)

52863. DIOSCOREA TRANSVERSA R. Br. Dioscoreaceæ. Queensland yam.

From Brisbane, Queensland. Seeds presented by C. T. White, Government botanist. Received April 12, 1921.

"A species common in coastal Queensland, where it produces small tubers of excellent quality." (*White.*)

For previous introduction, see S. P. I. No. 1331.

52864. LEYCESTERIA FORMOSA Wall. Caprifoliaceæ.

From Beaverton, Oreg. Plants presented by Benjamin W. Gothard. Received April 15, 1921,

"One of the handsomest and most useful of ornamental shrubs for all sections where the temperature does not fall much below zero. It is not subject to pests, is in bloom for months, and if cut down by severe frost it renews itself within a short time. Last winter, in sheltered situations, it endured zero temperature without injury. Here in Oregon it roots freely from hardwood cuttings in open ground when put in during November or December." (*Gothard.*)

A Himalayan bush, 6 feet high, allied to our Viburnums. The pink flowers backed by red bracts are borne in dense sprays at the end of fresh wood shoots.

For previous introduction, see S. P. I. No. 41558.

52865. FICUS MACROPHYLLA Desf. Moraceæ.

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, in charge, Department of Botany and Forestry. Received April 16, 1921.

One of the best Australian avenue trees; it has proved of value in southern California.

"The milky sap of this tree yields a very fair caoutchouc. The fiber of the root is of great durability." (*Maiden, Useful Native Plants of Australia, pp. 225 and 623.*)

For previous introductions, see S. P. I. Nos. 3494 and 37140.

52866. SOLANUM QUITOENSE Lam. Solanaceæ. Naranjilla.

From Guayaquil, Ecuador. Seeds presented by Dr. Frederic W. Goding, American consul general. Received April 19, 1921.

For use in hybridizing experiments to secure disease resistance.

For previous introduction, see S. P. I. No. 50607.

52867. DIOSCOREA PENTAPHYLLA L. Dioscoreaceæ. Round yam.

From Aulnay sous Bois, France. Tubers presented by Prof. R. de Noter, director, École d'Acclimatation et de Recherches Agricoles. Received April 7, 1921.

Variety *hortorum*.

"*Igname ronde de Chine* (round yam of China). The tubers made the first season, from plants grown from 'eyes' dug and replanted, weigh 1½ kilograms each; the second year the tuber may weigh 4 to 5 kilograms. The plant requires light sandy clay or, better, calcareous, richly fertilized soil. The tubers are gathered at the first frost and stored in the cellar. Storage for two years does not injure but improves the tubers. This yam is an excellent vegetable of delicate flavor and makes delicious fritters, cakes, and soufflés. The leaves, after the harvest, are used as cattle feed." (*De Noter.*)

52868 and 52869. CUCUMIS SATIVUS L. Cucurbitaceæ.

Cucumber.

From Erfurt, Germany. Purchased from Ernst Benary. Received April 21, 1921. Quoted notes by Mr. Benary.

Introduced for specialists of the department.

52868. "Short green early." 52869. "Short green Parisian."

52870 to 52889.

From Christiania, Norway. Seeds presented by Dr. N. Wille, director, Botanic Garden. Received April 1, 1921.

Introduced for experimental work in cereal-rust control.

52870. ACONITUM LYCOCTONUM L. Ranunculaceæ. **Monkshood.**

A yellow-flowered ornamental yielding an alkaloid similar to aconitin.

52871. AGROPYRON sp. Poaceæ. **Wheat-grass.**

Received as *Triticum sibiricum* (=*Agropyron sibiricum*), but the seeds are unlike those of that species that have been received heretofore.

52872. AIRA CAESPITOSA L. Poaceæ. **Hair-grass.**

This tufted perennial grass often forms excellent forage in mountain meadows.

52873. AIRA FLEXUOSA L. Poaceæ. **Hair-grass.**

A very slender grass with delicate purplish inflorescences.

52874. BERBERIS CHINENSIS Poir. Berberidaceæ. **Barberry.**

For previous introduction, see S. P. I. No. 36737.

52875. BERBERIS CHINENSIS Poir. Berberidaceæ. **Barberry.**

Received as *Berberis spathulata*, which is now considered to be the same as *B. chinensis*.

52876. BERBERIS GUIMPELI Koch and Bouche. Berberidaceæ. **Barberry.**

A hardy barberry, 4 to 6 feet tall, with handsome purplish fruits.

For previous introduction, see S. P. I. 44525.

52877. BERBERIS INTEGERRIMA Bunge. Berberidaceæ. **Barberry.**

A rather variable but attractive black-fruited species up to 6 feet tall.

For previous introduction, see S. P. I. No. 49060.

52878. × COLUTEA MEDIA Willd. Fabaceæ. **Bladder senna.**

Ornamental shrub, 10 feet tall, with orange and reddish yellow flowers and grayish green foliage.

52879. COLUTEA ORIENTALIS Mill. Fabaceæ. **Bladder senna.**

Flowering shrub similar to the preceding but of lower growth. Flowers during the summer.

For previous introduction, see S. P. I. No. 33314.

52880. ELYMUS ARENARIUS L. Poaceæ. **Lyme-grass.**

A coarse perennial grass used for sand binding on the seacoast.

For previous introduction, see S. P. I. No. 52795.

52870 to 52889—Continued.

52881. KOELERIA ALPICOLA Gren. and Godr. Poaceæ. **Grass.**

A tufted low perennial grass from the high mountain slopes.

Received as *Koeleria australis*, but the sample does not agree with that species.

52882. MELICA NUTANS L. Poaceæ. **Melic grass.**

A loosely tufted European grass useful for grazing.

52883. NONNEA ROSEA (Bieb.) Link. Boraginaceæ. **Rose alkanet.**

An attractive hardy annual with rose-colored, funnel-shaped flowers, closely allied to Anchusa.

For previous introduction, see S. P. I. No. 51041.

52884. SECALE sp. Poaceæ. **Rye.**

Received as *Secale montana*, but the sample does not agree with that species.

52885. SYMPHYTUM OFFICINALE L. Boraginaceæ. **Comfrey.**

Hardy perennial sometimes grown as a border plant for its foliage.

52886. THALICTRUM GLAUCUM Desf. Ranunculaceæ. **Meadow rue.**

An attractive hardy perennial 2 to 5 feet tall, with handsome gray-green, much-divided foliage and dainty yellow flowers.

52887. THALICTRUM MINUS NUTANS Regel. Ranunculaceæ. **Meadow rue.**

A form of this dainty border plant, a foot or more in height.

52888. TORRESIA ODORATA (L.) Hitchc. Poaceæ. **Holy grass.**

A low sweet-scented perennial grass used for basket making.

52889. TRISETUM SPICATUM (L.) Richter. Poaceæ. **Downy oat-grass.**

An erect tufted grass of value for grazing on high mountain slopes.

For previous introduction, see S. P. I. No. 28543.

52890 to 52892. CORCHORUS OLITORIUS L. Tiliaceæ. **Jute.**

From Dacca, Bengal, India. Seeds presented by Robert S. Finlow, fiber expert to the Government of Bengal, through Lieut. Col. A. T. Gage, director, Botanical Survey of India, Calcutta. Received April 8, 1921.

Nalta jute. A tall, herbaceous, sometimes woody annual, 1 to 5 meters high, sparingly branched, and bearing smooth, ovate-lanceolate leaves and small yellow flowers. The many-seeded beaked capsule is perfectly cylindrical. (Adapted from *Bureau of Agriculture, Philippine Islands, Farmers' Bulletin No. 11, p. 8.*)

The following varieties are named selections which are introduced for testing by the Office of Fiber Investigations:

52890. Green.

52891. R26.

52892. R30.

For previous introduction, see S. P. I. No. 25052.

52893 and 52894.

From Aulnay sous Bois, France. Presented by Prof. R. de Noter, École d'Acclimatation et de Recherches Agricoles. Received April 4, 1921. Quoted notes by Professor de Noter.

52893. ATRIPLEX HORTENSIS L. Chenopodiaceæ. **Orache.**

"Seeds of a variety with an exceedingly delicate flavor; it is easy to clean with very little waste. It brings three times the price of ordinary spinach [in France]; the plant is 2¼ meters (6½ feet) high and

52893 and 52894—Continued.

furnishes 1 kilogram (2⅕ pounds) at a single picking, 44 large succulent leaves, 20 to 30 centimeters long. It loses only one-fourth of its weight in cooking, while common spinach loses three-fourths of its weight and requires 300 leaves to make a kilogram. It makes a delicious salad. The plant is very hardy and easy to cultivate in any climate. The seeds can be sown at the end of February in northern Europe, and the plant thrives as well as it does in warm countries. The leaves are ready for picking two months after sowing, and on fertile soil the plant will yield all summer; any surplus can be fed to animals.

"The seeds, milled and bolted into flour, make an excellent feed. The analysis of the seeds shows the following percentages: Protein, 24.62; fat, 6; sugar and starch, 53.70; cellulose, 1.92; mineral matter, 3.46; water, 10.30. In Mexico this brown flour is used to make cakes.

"The stalks can be used for the extraction of cellulose and the manufacture of paper. An analysis of the dried stalks shows percentages as follows: Protein, 3; fat, 1.20; sugar and starch, 35.50; cellulose, 46.04; mineral matter, 5.16; water, 9.10."

For previous introduction, see S. P. I. No. 2003.

52894. POLYMNIA EDULIS Wedd. Asteraceæ.

"Tubers of a strong herbaceous plant, very decorative with its tall stalks 1.5 meters high, beautiful foliage, and yellow, autumnal flowers. The numerous, clustered, clean tubers are white, almost transparent, excessively sweet, and have a slight pear flavor. They are eaten raw in their native country, where they are keenly relished. The leaves, stalks, and tubers are greedily eaten by animals. The enormous quantity of sugar in the tubers yields three times as much alcohol as can be distilled from the Irish potato. Molasses can also be made from the tubers. A half-decayed tuber grew a plant which bore 32 tubers 15 to 20 centimeters long, weighing 3 kilograms.

"This hardy plant occurs wild and is also cultivated in the Andes Mountains. In Algeria irrigation is necessary. In any case, half of the foliage can be used during the summer for feed. At harvest the tubers are stored in a cellar. The plant is easily lifted from the soil and is superior to the Jerusalem artichoke and the sunflower in that it leaves nothing behind."

52895 to 52897.

From Kulara, Queensland, Australia. Seeds presented by J. A. Hamilton. Received April 14, 1921.

52895. ALBIZZIA LOPHANTHA (Willd.) Benth. Mimosaceæ.

A rapid-growing tree from Western Australia. The bark contains 8 per cent of tannin and the dry root 10 per cent of saponin. Cattle browse on the leaves. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 117, 315, and 537.*)

For previous introduction, see S. P. I. No. 8243.

52896. ALPHITONIA EXCELSA (Fenzl) Reissek. Rhamnaceæ.

A tree 50 feet high, one of the characteristic trees of the Brigalow scrubs of New South Wales, Queensland, and northern Australia, with hard close-grained durable wood which takes a high polish; it is suitable for gunstocks, coopers' staves, and for indoor purposes. The wood is tough and warps in drying; near the outside it is pinkish and the inner wood is dark brown. The bark is occasionally used for tanning. (Adapted from *Maiden, Useful Native Plants of Australia, p. 373.*)

52897. PLEIOGYNIUM SOLANDRI (Benth.) Engl. Anacardiaceæ.
(*Spondias pleiogyna* F. Muell.)

A tree native to Queensland; the hard dark-brown wood with red markings resembles that of the American walnut. The grain is fairly close and splits quite straight. It is an excellent wood for the joiner or cabinetmaker and is also suitable for turnery. (Adapted from *Maiden, Useful Native Plants of Australia, p. 599.*)

52898 to 52900.

From Nice, France. Presented by Dr. A. Robertson Proschowsky, Jardin d'Acclimatation. Received April 18, 1921. Quoted notes by Doctor Proschowsky.

52898. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"Seeds of varieties of peaches from Laos, French Indo China."

52899. CYPERUS ESCULENTUS L. Cyperaceæ. **Chufa.**

"Tubers which can be kept in sand in perfect state for months and which have a very good taste like very sweet almonds. The plant grows with the greatest facility, does not require much moisture, and yields an abundant crop. When the tubers are planted in March the crop is ripe in October and November."

For previous introduction, see S. P. I. No. 43578.

52900. MALUS LAOSENSIS (Cardot) Cheval. Malaceæ. **Laos apple.**
(*Pyrus laosensis* Cardot.)

Seeds of an interesting species of apple growing wild on the high plateaus of Indo China at Tranninh at an altitude of 1,500 meters and also on certain mountains of the Tonking. It is a large tree which produces fruit similar in shape, color, and flavor to certain cider pears of Normandy. A drink has been made of it the color of which recalls the Normandy pear cider. Although this species grows in the dense forest and is uncared for by the mountain people, it may have been cultivated and improved in the past. The trees from which this seed was obtained may be remnants of specimens cultivated as sacred trees around certain Laos pagodas where the priests cared for them. (Adapted from *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences, Paris, vol. 170, p. 1129.*)

52901. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Reading, England. Tubers presented by Sutton & Sons. Received April 20, 1921.

"*Dunnotar Castle.* The crop yielded over 13 tons per acre." (*Sutton.*)

For use in breeding work.

52902. CALAMUS sp. Phœnicaceæ. **Rattan palm.**

From Lamao, Bataan, Philippine Islands. Seeds presented by Adn. Hernandez, Director of Agriculture. Received April 26, 1921.

"*Bejuco* seed." (*Hernandez.*)

For a discussion of rattan palms in the Philippines, see Brown and Merrill, Philippine Palms and Palm Products, pages 34 to 54.

52903 and 52904.

From Nairobi, Kenia, Africa. Seeds presented by Alexander Holm, Director of Agriculture. Received April 8, 1921.

52903. CAPRIOLA sp. Poaceæ. **Grass.**

"Probably an undescribed species of Capriola." (*C. V. Piper.*)

52904. CAPRIOLA sp. Poaceæ. **Grass.**

"Apparently a mixture of two species of Capriola." (*C. V. Piper.*)

52905. DIOSCOREA ESCULENTA (Lour.) Burkill. Dioscoreaceæ. **Lesser yam.**

From Dominica, British West Indies. Tubers presented by A. Keys, acting curator, Botanic Gardens. Received April 11, 1921.

"*Silver.* This yam is better known locally as the 'Silk yam.'" (*Keys.*)

"A small-tubered, smooth, tough-skinned yam having white flesh of good quality." (*R. A. Young.*)

52906 to 52908. DIOSCOREA ALATA L. Dioscoreaceæ.

Greater yam.

From Antigua, British West Indies. Tubers presented by F. G. Harcourt, agricultural superintendent. Received April 11, 1921.

52906. "*Bottle-Neck Lisbon.* This variety is economically preferred to the ordinary Lisbon yam, the tubers being of better shape and less forked; also generally considered to be of slightly better quality." (*Harcourt.*)

"A light-brown, rather thin-skinned, white-fleshed yam. The tubers reach a weight of several pounds each. The quality is excellent, the flesh being mealy, fine grained, and of rich but delicate flavor when cooked." (*R. A. Young.*)

52907. "*Lisbon.* A yam of very good quality. The tubers are irregular in shape, showing a tendency to forking." (*Harcourt.*)

"A white-fleshed yam of excellent quality, fine grained and of delicate, rich flavor when cooked. The skin is light brown and rather thin. The tubers usually attain a weight of several pounds each." (*R. A. Young.*)

52908. "*Horn.* The tubers of the *Horn* yam usually curve upward, i. e., toward the surface of the soil, and are rather brittle." (*Harcourt.*)

"A white-fleshed yam having dark-brown, rather thick skin. The flesh remains white when cooked and is of good quality, though the texture is not quite so fine as that of the Lisbon varieties. The tubers are long and generally curved. They commonly attain a weight of several pounds each." (*R. A. Young.*)

52909. CATALPA BUNGEI Meyer. Bignoniaceæ.

From Nanking, Kiangsu, China. Seeds presented by J. L. Buck, College of Agriculture and Forestry, University of Nanking. Received May 3, 1921.

"A rapid-growing Chinese tree, up to 100 feet in height, with a trunk 10 to 15 feet in circumference a few feet above the ground. The wood, which is strong, light, durable, and nonwarping, resembles walnut to a large extent and is in much demand for fine furniture. The tree might be cultivated in the semiarid sections of the United States where the winters are not too severe. It prefers a porous soil and is easily propagated from suckers which spring up from the roots that are near the surface of the ground." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 44664.

52910. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ.

Pai ts'ai.

From China. Seeds collected by Frank N. Meyer, Agricultural Explorer of the United States Department of Agriculture. Numbered April, 1921.

These seeds were found in Mr. Meyer's baggage with no descriptive notes.

52911. ZEA MAYS L. Poaceæ. **Corn.**

From Bogota, Colombia. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 19, 1920. Numbered April, 1921.

"(No. 493a. Collected at Bogota market. October 14, 1920.) Flint corn of the variety commonly seen in this region. Of interest to those engaged in corn breeding."

52912. PTEROCARPUS ERINACEUS Lam. Fabaceæ.

From Ibadan, Southern Provinces, Nigeria. Seeds presented by John G. Davis, acting Director of Agriculture. Received April 6, 1921.

A more or less deciduous tree 15 to 20 meters high, with a straight trunk, spreading crown, and pubescent branchlets. The glabrous leaves are unequally

pinnate. The flowers are in terminal panicles with racemose branches. The tree extends into Natal, Swaziland, the Transvaal, to the West Coast, and from the coast to the Matapos. A valuable and durable timber found in great abundance and the most valuable asset Mozambique Province has in its tropical forests. It produces also the African gum *kino*. (Adapted from *Sims, Forest Flora of Portuguese East Africa, p. 44.*)

52913. Allium cepa L. Liliaceæ. **Onion.**

From Valencia, Spain. Seeds presented by John R. Putnam, American consul. Received April 1, 1921.

Seeds of the onion which is grown on an extensive scale in Denia, Spain. These onions come upon the American market in a peculiar type of package and are the large yellow or straw-colored onions sold as Spanish onions.

52914. Prunus armeniaca L. Amygdalaceæ. **Apricot.**

From Aleppo, Syria. Seeds presented by Digby A. Willson, vice consul in charge. Received April 6, 1921.

"The apricot grown in the Harput (Kharpoot) district is recognized to be the most luscious and most sought for noncitrus fruit in the Near East. In order that our Department of Commerce and our Department of Agriculture may understand the climate under which the Harput apricot is cultivated, the following information is given:

"The city of Harput is situated in about the same altitude as Denver, Colo., being slightly more than 5,000 feet above sea level. During the summer, which is very hot, little water is found in the district, owing to the entire lack of rain in the summer months, but the winter is extremely cold and snowstorms are not infrequent. The apricot trees usually grow throughout the city in the various gardens, which are irrigated from small streams supplying sufficient water for the cultivation of the trees after the spring rains. Great care is exercised in the cultivation of the Harput apricot, resulting in a delicious fruit about the size of an ordinary peach; the apricots are ripe and ready for picking about the last of May or the first days in June. I am informed by many naturalized Americans from the Harput district that these apricot trees will grow in southern California." (*Willson.*)

52915. Sclerocarya birrea (A. Rich.) Hochst. Anacardiaceæ.

From Matan'a el Saff, Egypt. Seeds presented by A. Bircher, director, Middle Egypt Botanic Station. Received April 7, 1921.

A tree with narrow, glabrous, 9 to 23 foliolate leaves tufted at the ends of the branches. The elliptic, entire, leathery pinnæ are 2 inches in length. The globose, glabrous, whitish yellow drupes, 1 inch long, are borne singly on stout peduncles. A fermented liquid is prepared from the sweetish acid flesh. The stony nut contains two or four seeds of a walnutlike flavor. Native to Upper Guinea and the Nile land. (Adapted from *Tancredi, Colonia Eritrea, p. 112*).

52916. Melilotus alba Desr. Fabaceæ. **White sweet clover.**

From Madrid, Spain. Seeds presented by A. Frederico Gredills, curator, Botanic Garden. Received April 5, 1921.

For experimentation by the Office of Forage-Crop Investigations.

52917 to 52922.

From Bello Horizonte, Minas Geraes, Brazil. Seeds presented by Prof. P. H. Rolfs, through Prof. C. V. Piper, United States Department of Agriculture. Received April 1, 1921. Quoted notes by Professor Rolfs.

52917. Axonopus sp. Poaceæ. **Grass.**

"Collected at Vicosa. A grass that has some very good points, for grazing purposes, very leafy, covering the ground more densely than *St. Augustine* at its best. Where the leaves are not cropped off by grazing it stands about 8 inches tall. Zebu have grazed it considerably.

52917 to 52922—Continued.

It is very persistent in its own patches and crowds out practically everything else. The patches that I saw produced very little seed; possibly more will be produced when we get into the beginning of the dry season."

52918. BRACHIARIA PLANTAGINEA (Link) Hitchc. Poaceæ. **Grass.**

"Collected at Ponto Novo; where it occurred it crowded out practically everything else. It made a dense covering, the leafy part of it standing about 2½ feet tall. I saw it growing at all the points visited and find it also present here at Bello Horizonte. It looks as though it may be perennial here. The seed habits seem to be good, as it appears to ripen about all at the same time."

For previous introduction, see S. P. I. No. 21961.

52919. HOLCUS HALEPENSIS L. Poaceæ. **Johnson grass.**
(*Sorghum halepense* Pers.)

"Collected at Ligacao. Appears to be a sorghum that grows natively as a weed."

52920. PASPALUM sp. Poaceæ. **Grass.**

"Collected at Furtados de Campos."

52921. PASPALUM sp. Poaceæ. **Grass.**

"Collected at Ligacao."

52922. VALOTA INSULARIS (L.) Chase. Poaceæ. **Grass.**

"Collected at Ponto Novo. Occurs rather abundantly along the roadside."

52923. LAUROCERASUS ILICIFOLIA (Nutt.) Roemer. Amygdalaceæ.
(*Prunus ilicifolia* Walp.)

From Los Angeles, Calif. Seeds presented by P. D. Barnhart. Received April 5, 1921.

"Wild cherry, for trial as stock and as an ornamental evergreen tree." (*Barnhart.*)

For previous introduction, see S. P. I. No. 39584.

52924 to 52926. LILIUM spp. Liliaceæ. **Lily.**

From Ootacamund, Bombay Presidency, India. Presented by F. H. Butcher, curator, Government Botanic Gardens and Parks. Received April 1, 1921.

52924. LILIUM NEILGHERRENSE Wight.

Bulbs of an Indian lily with a globose bulb 5 to 7.5 cubic millimeters in diameter, with a stiff stem 3 to 6 decimeters high, creeping at the base, and with 30 to 40 crowded leaves. The one to three white ascending fragrant flowers are 15 to 18 cubic millimeters long and trumpet shaped. The perianth segments are oblanceolate, reflexed only at the tips. (Adapted from *Botanical Gazette, vol. 27, p. 242.*)

52925. LILIUM NEPALENSE D. Don.

Bulbs of a magnificent species, of striking beauty, generally considered too tender for open-air culture except in the more favored parts of England, introduced from Nepal in 1824. The plant grows 1 to 3 feet high and bears nodding bell-shaped flowers of a beautiful soft yellow, the lower half of the gracefully recurved segments being blotched with bright purple-brown and shaded with maroon. (Adapted from *Journal of Horticulture and Home Farmer, 3d ser., vol. 54, p. 348.*)

52926. LILIUM NEILGHERRENSE Wight.

Seeds of S. P. I. No. 52924.

52927. Dioscorea alata L. Dioscoreaceæ. Greater yam.

From Arch Creek, Fla. Tubers presented by J. DeHoff. Received April 23, 1921.

"I procured one tuber in 1893, when I first came to Avon Park, Fla., from a neighbor, H. G. Burnett, who had in his garden a few which he procured from his father-in-law at Fort Myers where small quantities have been grown, I understand, for 50 years. I had kept seed from year to year since that time, no more though, than I wanted myself, until year before last when somehow they made several times more seed bulbs than I ever saw before. This last year they again made only very few seed tubers. I received them under the name of 'White Jamaica yam.' I grew them for five years near Palatka (at Florahome) and they did well on high hammock land. Down here in Dade County, on very light sandy and rocky land, they produce as much as sweet potatoes and, with me, take the place of Irish potatoes; the latter will not succeed on this dry soil at all. The yams keep for months." (*DeHoff.*)

"A white-fleshed yam, fairly dry when cooked, and of excellent quality. The vine produces aerial tubers, which are referred to in Mr. DeHoff's letter as 'seed tubers.'" (*R. A. Young.*)

For previous introduction, see S. P. I. No. 37943.

52928 to 52951.

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Gardens. Received April 4, 1921.

52928. Acanthopanax setuenensis Harms. Araliaceæ.

A bush 2 to 3 millimeters high, native to western Hupeh, where it is found in thickets at altitudes of 1,800 to 2,100 meters. The white flowers, in short-peduncled umbels, are followed by black fruits. This species is closely related to *Acanthopanax leucorrhizus*, but is easily distinguished from it by the leaves with almost invariably three leaflets, by their glaucous underside, their more coriaceous texture, and by their more remote and shallower serration. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 599.*)

52929. Aralia chinensis glabrescens (Franch. and Sav.) C. Schneid. Araliaceæ.

A black-fruited bush 3 millimeters high, native to China in thickets at altitudes of 900 to 2,700 meters. This variety differs from the type in the glabrous or nearly glabrous glaucescent under side of the leaflets; and from the equally glabrous *Aralia chinensis* variety *mandshurica* it differs chiefly in the usually smaller, more papery leaflets with smaller appressed teeth. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 567.*)

52930. Berberis edgeworthiana C. Schneid. Berberidaceæ. Barberry.

A small shrub native to Simla, British India, with yellowish gray branches and one to two parted yellowish spines about 2 centimeters long. The elliptic-lanceolate membranaceous leaves are green above and paler below, 1 to 3 centimeters long. The small flowers, 4 millimeters in diameter, are in dense cymes up to 3 centimeters long. (Adapted from *Bulletin Herbier Boissier, 2d ser., vol. 8, p. 263.*)

52931. Berberis francisci-ferdinandi C. Schneid. Berberidaceæ. Barberry.

A rather striking species apparently most nearly related to the Himalayan *Berberis chitria*, which is well distinguished, however, by its puberulent branchlets, the longer stalked and numerous ovules, and by the distinct styles. The handsome shrub is 2 to 3 meters high, with red young branches, thereafter purplish, glabrous, and shining.

The simple, yellowish red spines are up to 2.5 centimeters long. The papery deciduous leaves are ovate or ovate-lanceolate with marginal spines 1 to 1.5 millimeters long. The yellow flowers 7 to 9 millimeters in diameter are in dense panicles 5.5 to 12 centimeters long. The scarlet ovate fruits are 12 millimeters in diameter. Native to thickets in western China at altitudes of 1,300 to 4,000 meters. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 367.*)

52928 to 52951—Continued.

52932. BERBERIS sp. Berberidaceæ. **Barberry.**

Received as *B. leitchlinii*, for which a place of publication has not been found.

52933. BETULA MEDWEDIEWI Regel. Betulaceæ. **Birch.**

A lofty tree, with erect branches and twigs, found in forest borders at an altitude of 6,800 feet on Mount Somlia, Transcaucasia. The papery ovate leaves, glabrous and olive green above, are paler below and sometimes pilose on the veins. The staminate catkins are in short racemes at the tips of the branches. The cylindrical pistillate catkins are 3 to 3.5 centimeters long. (Adapted from *Gartenflora, vol. 36, p. 383.*)

52934. CLEMATIS MONTANA RUBENS Wilson. Ranunculaceæ.

A plant of exceptional beauty with rose-colored flowers 1½ to 2 inches in diameter, which are produced freely when the plant is only a foot high. It requires no background to show it to advantage, as in the case of the white flowers of the type, and is most suitable for training over old stumps, etc. Most of the flowers are produced in late May and June, and odd flowers continue to develop all summer. (Adapted from *The Garden, vol. 77, p. 84.*)

For previous introduction, see S. P. I. No. 52630.

52935. COTONEASTER ACUTIFOLIA VILLOSULA Rehd. and Wils. Malaceæ.

A very vigorous shrub 5 to 7 feet high, native to western Hupeh, with young shoots clothed with yellowish gray loose hairs, becoming smooth and purplish brown the second year. The leaves are 1½ to 4½ inches long, and the white flowers are rose tinted. The woolly, roundish, pear-shaped fruits are ultimately shining black. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 158.*)

52936. DAVIDIA INVOLUCRATA VILMORINIANA (Dode) Hemsl. Cornaceæ.

A tree 40 to 50 feet tall, native to western China, with alternate, ovate, bright-green leaves 2 to 4 inches long, inconspicuous flowers in terminal globular heads, and greenish yellow fruits with brown dots, nearly 2 inches long. The bracts are as in the typical form. (Adapted from *Curtis's Botanical Magazine, pl. 8432.*)

Received as *D. laeta*, which is now referred to this form.

For previous introduction, see S. P. I. No. 49669.

52937. HYDRANGEA PETIOLARIS Sieb. and Zucc. Hydrangeaceæ.

A hardy deciduous climber with deeply serrated, somewhat heart-shaped leaves about 4 inches long. The large flat corymbs, often 10 inches across, are composed mainly of small fertile blossoms which are inconspicuous and a few large white sterile blooms. As the number of showy flowers is small, the plant is not to be recommended as a wall climber, but as a tree climber, for clothing the trunks with foliage and flower, it can not be surpassed. It clings to the tree with rootlets thrown out from its lengthening growths and requires no wire or string. One plant ascended 40 feet in 13 years. (Adapted from *The Garden, vol. 64, p. 219.*)

52938. PYRACANTHA GIBBSII A. Jackson. Malaceæ.

A western Chinese shrub, up to 14 feet high, nearly spineless, with large, ovate-oblong, very variable leaves up to 3 inches long, white flowers, and scarlet, globular, abundant fruits about one-third of an inch in diameter. The leaves are commonly used for tea by the Chinese. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 16, p. 309.*)

For previous introduction, see S. P. I. No. 44399.

52928 to 52951—Continued.

52939 to 52951. RUBUS spp. Rosaceæ. **Bramble.**

52939. RUBUS ADENOPHORUS Rolfe.

A very distinct species with thick, armed stems, hairy flowering branches, and stipitate purple glands of unequal length. The hairy leaves are ternated (or the upper ones rarely simple) and green on both surfaces. The rachis, peduncles, and sepals are hairy, glandular, and a beautiful purple. The sepals recall a pincushion stuck full of black-headed pins. This glandular development extends to the stems and petioles. The rose-colored flowers with petals 5 millimeters long, are in 6 to 10 flowered racemes 3 to 4 centimeters long. The black edible fruit is 1 centimeter wide. (Adapted from *Kew Bulletin of Miscellaneous Information, 1910, p. 382.*)

For previous introduction, see S. P. I. No. 29975.

52940. RUBUS ALLEGHANIENSIS Porter.

One of the numerous forms of the cultivated blackberry, often known as *Rubus nigrobaccus* but apparently only a more or less stable form of *R. alleghaniensis.*

52941. RUBUS BIFLORUS QUINQUEFLORUS Focke.

A large, vigorous-growing bush with attractive, stout, "whitewashed" stems 12 to 15 feet in height and ornamental foliage. This plant produces rich, golden yellow, raspberrylike fruits of pleasant flavor which may prove of considerable value in the hands of the hybridist. (Adapted from *The Garden, vol. 76, p. 624.*)

For previous introduction, see S. P. I. No. 50294.

52942. RUBUS CHROOSEPALUS Focke.

The most valuable feature of this species is the very ornamental evergreen foliage, which may be compared with that of a lime tree. The slender stems, furnished with a few spines, grow 6 to 7 feet in a season. The simple cordate leaves, 4 inches long and 3½ inches wide, are glabrous above and white beneath. The flowers are borne in large panicles and have no decorative value; the fruits are small and blue. Native to Hupeh and Ichang at altitudes of 4,000 feet. The best use for the plant is to cover a pillar, pergola, or fence. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 51, p. 166.*)

52943. RUBUS FLOSCULOSUS Focke.

A deciduous shrub up to 12 feet high, with stout erect stems arching at the much-branched top. The pinnate leaves 4 to 7 inches long are smooth above and covered beneath with a close white felt. The small pink flowers in narrow racemes 2 to 4 inches long are followed by small, very dark red or black fruits which are good eating. Native to central and western China. (Adapted from *Wilson, A Naturalist in Western China, vol. 2, p. 31.*)

For previous introduction, see S. P. I. No. 50296.

52944. RUBUS GIRALDIANUS Focke.

A deciduous Chinese bramble with ornamental foliage and attractive slender white stems. To get the best effect, at least 8 or 10 plants should be grouped together and the old growths cut out in autumn to expose the full beauty of the previous summer's shoots. (Adapted from *The Garden, vol. 76, p. 624.*)

For previous introduction, see S. P. I. No. 50297.

52945. RUBUS INOPERTUS Focke.

A climbing shrub with strong stems and ovate leaflets green on each surface. The short-pediceled flowers are axillary and clustered at the tips of the branches. Native to southern and central China at altitudes of 2,000 meters. (Adapted from *Bibliotheca Botanica (Species Ruborum), vol. 72, p. 182.*)

52928 to 52951—Continued.

52946. RUBUS LASIOSTYLUS Focke.

A stout, hardy plant, 4 to 12 feet high, strikingly ornamental with its thick, very spiny stems of a peculiar whitened character. The pinnate leaves are dark green above and silvery white beneath; when young, the leafstalks and veins are suffused with rose. The magenta-red flowers are followed by curious white woolly fruits which are sweet to the palate and said to be used for food in China, where it is native. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 31, p. 167,* and *Gardening Illustrated, vol. 28, p. 631.*)

For previous introduction, see S. P. I. No. 50298.

52947. RUBUS LASIOSTYLUS DIZYGOS Focke.

A shrub native to the uplands of western Hupeh at an alt tude of 1,600 meters, with 5-pinnate leaves of the fertile branches and rose-colored flowers. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 53.*)

For previous introduction, see S. P. I. No. 44402.

52948. RUBUS PARVIFOLIUS L.

An East Asian and Australian plant which produces much finer fruit in the mountains of Australia than in the lowlands. It ex-- tends as a native to Japan. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 477.*)

For previous introduction, see S. P. I. No. 50301.

52949. RUBUS PHOENICOLASIUS Maxim. **Wineberry.**

A tall subscandent singularly handsome bramble with slender branches, native to Japan. The peduncles and calyx are clothed with close-set, long-spreading, stiff, gland-tipped, red-purple hairs which in the lower part of the stem are glandless and mixed with slender, straight, or recurved prickles. The pinnately 3-foliolate leaves are 5 to 7 inches long. The leaflets are green and glabrous above and covered with snow-white tomentum beneath. The flowers have minute pale rose-red petals and spreading narrowly lanceolate sepals 1 inch long. The ovoid-oblong fruits, three-fourths of an inch long, made up of about 40 scarlet glabrous drupes, are edible but mawkish. (Adapted from *Curtis's Botanical Magazine, pl. 6479.*)

For previous introduction, see S. P. I. No. 50302.

52950. RUBUS PUBESCENS Weihe.

A very robust bramble native to Europe, with strong canes which, however, do not ascend to any considerable height without support. The fruit is well developed and pleasantly flavored.

For previous introduction, see S. P. I. No. 50303.

52951. RUBUS XANTHOCARPUS Bur. and Franch.

A trailing Chinese bramble with large ovate bright-yellow fruits which are fragrant and palatable.

For previous introduction, see S. P. I. No. 50305.

52952 to 52954.

From South America. Seeds presented by J. B. Mertie, jr., United States Geological Survey. Received April 7, 1921.

52952. LUFFA CYLINDRICA (L.) Roemer. Cucurbitaceæ.
(*L. aegyptiaca* Mill.)

Esponja de aire.

52953 and 52954. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor-bean.**

52953. Large. 52954. Small.

52955. CALAMAGROSTIS COARCTATA (H. B. K.) Steud. Poaceæ. **Grass.**

From Sydney, New South Wales. Seeds presented by George Valder, undersecretary, Department of Agriculture. Received April 7, 1921.

An erect, cespitose grass, about a foot high, from cold mountainous regions in Ecuador and Colombia at an altitude of about 8,500 feet. The root is fibrous, and the leaves are very narrow. (Adapted from *Humboldt, Bonpland, und Kunth, Nova Genera et Species Plantarum, vol. 1, p. 143.*)

52956 to 53005. TRITICUM spp. Poaceæ. **Wheat.**

From Buenos Aires, Argentina. Seeds presented by the Cereal Exchange. Received April 8, 1921. Quoted notes by the Cereal Exchange.

Introduced for the Office of Cereal Investigations.

52956 to 52999. TRITICUM AESTIVUM L. (*T. vulgare* Vill.) **Common wheat.**

52956 to 52970. "*Barletta.*"

52956. "From southern Buenos Aires."

52957. "From eastern Buenos Aires."

52958. "From eastern Buenos Aires."

52959. "From eastern Buenos Aires."

52960. "From eastern Buenos Aires."

52961. "From eastern Buenos Aires."

52962. "From eastern Buenos Aires."

52963. "From eastern Buenos Aires."

52964. "From eastern Buenos Aires."

52965. "From eastern Buenos Aires."

52966. "From northern Pampa Central."

52967. "From central Pampa Central."

52968. "From southern Santa Fe."

52969. "From eastern Entre Rios."

52970. "From southern Cordoba."

52971 to 52976. "*Pampa.*"

52971. "From central Pampa Central."

52972. "From northern San Luis."

52973. "From eastern Buenos Aires."

52974. "From southern Buenos Aires."

52975. "From northern Pampa Central."

52976. "From southern Cordoba."

52977 to 52984. "*Hungaro.*"

52977. "From northern Pampa Central."

52978. "From eastern Buenos Aires."

52979. "From southern Santa Fe."

52980. "From southern Cordoba."

52981. "From southern Cordoba."

52982. "From southern Buenos Aires."

52983. "From eastern Buenos Aires."

52984. "From southern Buenos Aires"

52956 to 53005—Continued.

52985 to 52987. "*Ruso.*"

52985. "From eastern Buenos Aires."

52986. "From eastern Buenos Aires."

52987. "From southern Pampa Central."

52988 to 52994. "*Rieti.*"

52988. "From central Pampa Central."

52989. "From eastern Buenos Aires."

52990. "From eastern Buenos Aires."

52991. "From northern Buenos Aires."

52992. "From southern Cordoba."

52993. "From northern Pampa Central."

52994. "From southern Buenos Aires."

52995. "*Chubut,* from southern Buenos Aires."

For previous introduction, see S. P. I. No. 5464.

52996. "*Tuzulla,* from central Cordoba."

52997. "*Frances,* from eastern Buenos Aires."

For previous introduction, see S. P. I. No. 5466.

52998. "*Australiano,* from northern Pampa Central."

52999. "*Australiano,* from northern Pampa Central."

53000 to 53005. TRITICUM DURUM Desf. Poaceæ. **Durum wheat.**

53000. "*Candeal,* from southern Buenos Aires."

For previous introduction, see S. P. I. No. 41402.

53001. "*Candeal,* from eastern Buenos Aires."

For previous introduction, see S. P. I. No. 41402.

53002. "*Candeal* (*R*), from the Province of Mendoza."

53003. "*Candeal* (*R*), from the Province of Mendoza."

53004. "*Taganrog,* from eastern Buenos Aires."

For previous introduction, see S. P. I. No. 41043.

53005. "*Taganrog,* from eastern Buenos Aires."

For previous introduction, see S. P. I. No. 41043.

53006. DIOSCOREA ROTUNDATA Poir. Dioscoreaceæ. **Guinea yam.**

From Mayaguez, Porto Rico. Tubers presented by T. B. McClelland, horticulturist, Agricultural Experiment Station. Received April 28, 1921.

"A white-fleshed yam of excellent quality, and one of the most popular varieties grown in Porto Rico. The tubers are usually cylindrical, commonly weighing from 3 to 6 pounds each at maturity." (*R. A. Young.*)

53007. TRIFOLIUM GLOMERATUM L. Fabaceæ. **Cluster clover.**

From Melbourne, Victoria, Australia. Seeds presented by F. H. Brunning. Received April 29, 1921.

A valuable annual which seeds freely and so maintains itself even on dry sandy soils. It is a splendid plant for improving bare arid pasture lands, which it greatly enriches, thereby adding to the carrying capacity. The clover spreads rapidly and yields an abundance of good pasturage.

For previous introduction, see S. P. I. No. 52356.

53008. MALUS DOUMERI (Bois) Cheval. Malaceæ. **Tonking apple.**

From Laos, Indo China. Seeds presented by R. Miéville, director, Station Agricole du Tranninh, Chieng Khuang, through M. Auguste Chevalier, Agronomie Coloniale, Ecole Pratique des Hautes Etudes, Paris, France. Received April 25, 1921.

"An interesting wild apple native to the high plateaus of French Indo China, at altitudes of 800 to 2,000 meters (2,600 to 6,500 feet), notably on Langbian and the lesser mountain ranges. It is a large tree which produces fruits similar in form, flavor, and color to certain varieties of Normandy cider pears.

"Although the species grows in the open forest and is uncared for by the present mountaineers, it must have been cultivated and improved at some ancient time. There remain specimens cultivated as sacred trees around certain Laos pagodas; here the trees were cared for by priests." (*Chevalier.*)

53009 to 53030. ASTER spp. Asteraceæ. **Aster.**

From Elstree, Herts, England. Plants presented by Hon. Vicary Gibbs, Aldenham House Gardens. Received April 20, 1921.

53009 to 53029. ASTER NOVI-BELGII L.

53009. *Belgian Queen.* An excellent, much-branched, late-blooming variety 6½ feet high, with well-clothed flowering sprays which are very beautiful on the bush or in a vase. The flowers are rich blue-purple, and the disk keeps yellow, which is a valuable asset. (Adapted from *The Garden, vol. 84, p. 610,* and from *Country Life, vol. 45, p. 376.*)

53010. *Bluebeard.* A light, graceful variety, 6 feet high, with pretty, soft-blue flowers. (Adapted from *The Garden, vol. 84, p. 610,* and from *Country Life, vol. 45, p. 376.*)

53011. *Blue Gem.* The bluest purple of any Michaelmas daisy known. (Adapted from *The Garden, vol. 84, p. 610.*)

53012. *Blushing Bride.* A variety with flowers of a very pale pink. (Adapted from *The Garden, vol. 84, p. 610.*)

53013. *Brightest and Best.* A very effective variety 4 feet high, with a remarkably handsome habit and magenta flowers. (Adapted from *The Garden, vol. 84, p. 610,* and from *Country Life, vol. 45, p. 376.*)

53014. *Brussels.* Reported as a variety of good habit and vigorous constitution, which reaches a height of 4 feet and bears enormous, single, pale-lavender flowers in graceful sprays.

53015. *Captain Fryatt.* Said to be one of the best of the pale mauves, 4½ feet high, of free growth and excellent for cutting.

53016. *Climax.* A beautiful new variety said to be 5 feet high, with large lavender flowers 2 inches across.

53017. *General Leman.* A variety with flowers of the purest deep rose without any blue in it. This color is superb under artificial light. (Adapted from *The Garden, vol. 84, p. 610.*)

53018. *Ghent.* Reported as a fine pale-pink variety.

53019. "*Joan Vaughan.* A new seedling aster." (*Gibbs.*)

53020. *Liege.* A good light-pink variety, very free flowering.

53021. *Malines.* A blue-flowered variety of great merit. (Adapted from *Country Life, vol. 45, p. 376.*)

53022. *Mons.* A most distinct and remarkably beautiful variety, 3 to 4 feet high, forming sharply rounded bushes completely covered with deep-pink single flowers which all open at the same time. This fine, healthy, sturdy variety is fairly early and has a long flowering period. The color is superb under artificial light. (Adapted from *Gardeners' Chronicle, vol. 68, p. 285,* and from *The Garden, vol. 84, p. 610.*)

53023. "*Namur.* A new seedling aster." (*Gibbs.*)

53009 to 53030—Continued.

53024. *Nurse Cavell.* A soft-pink variety said to be 4½ feet high, of excellent quality and very free flowering.

53025. "*President.* A new seedling aster." (*Gibbs.*)

53026. "*Robinson V. C.* A new seedling aster." (*Gibbs.*)

53027. *Sam Banham.* A pure-white seedling from *Climax*, reported as identical with that variety except in color; excellent for cutting.

53028. "*The Queen.* A new seedling aster." (*Gibbs.*)

53029. *Ypres.* A variety with a stiff bushlike habit and pale-pink flowers. (Adapted from *The Garden, vol. 84, p. 610.*)

This variety is said to be 3 feet high, of very free growth, and the flowers have a fine yellow eye.

53030. ASTER VIMINEUS Lam. Asteraceæ. **Aster.**

"*Desire.* A new seedling aster." (*Gibbs.*)

53031 to 53080.

From Copenhagen, Denmark. Seeds presented by Axel Lange, curator, Botanic Garden of the University. Received April 28, 1921.

Introduced for experiments with leaf rusts of grains and grasses.

53031. AGROPYRON OBTUSIUSCULUM Lange. Poaceæ. **Wheat-grass.**

A perennial grass native to the temperate regions of both hemispheres.

53032. ALKANNA LUTEA (Desr.) A. DC. Boraginaceæ. **Yellow alkanet.**

A hardy European plant with golden yellow trumpet-shaped flowers, somewhat resembling *Anchusa italica* except in flower color.

Received as *Nonnea lutea*, which is now referred to *Alkanna lutea.*

53033. BAPTISIA AUSTRALIS (L.) R. Br. Fabaceæ.

A handsome, stout, perennial herb 4 to 6 feet high, native to eastern North America, with lupinelike indigo-blue flowers an inch long in loose-flowered, long, terminal racemes.

For previous introduction, see S. P. I. No. 4784.

53034. BERBERIS ARISTATA DC. Berberidaceæ. **Barberry.**

A Himalayan shrub 8 feet high, which bears stout spreading racemes of sessile bright-red berries which finally become bluish purple and bloomy.

53035. BERBERIS LYCIUM Royle. Berberidaceæ. **Barberry.**

A Himalayan shrub 6 feet high, bearing violet fruits in sessile racemes.

For previous introduction, see S. P. I. No. 49928.

53036. BROMUS ADOENSIS Hochst. Poaceæ. **Brome-grass.**

An Abyssinian plant about 1 to 2 feet high with softly hairy foliage and nodding panicles, 3 to 5 inches long, of shining awned spikelets.

53037. BROMUS LACINIATUS Beal. Poaceæ. **Brome-grass.**

A tall smooth perennial with large open drooping panicles of large spikelets.

53038. BROMUS RACEMOSUS L. Poaceæ. **Brome-grass.**

Chess or *cheat*, a smooth weed of waste places, introduced from Europe, sometimes infesting grain fields. It is 1 to 3 feet tall.

53039. CERINTHE MAJOR L. Boraginaceæ. **Honeywort.**

A showy annual 6 to 15 inches high with very rough leaves and flowers that are yellow below and purplish above, bearing showy bracts.

53031 to 53080—Continued.

53040. CLEMATIS GRAVEOLENS Lindl. Ranunculaceæ. Clematis.

A rapid climber found from the Himalayan region to Persia, bearing thin, pinnate, shiny leaves and cymes of yellow flowers, 1½ inches across, tinted with green.

For previous introduction, see S. P. I. No. 30765.

53041. CLEMATIS RETICULATA Walt. Ranunculaceæ. Clematis.

A slender climber native to the United States from South Carolina to Alabama and Florida, which bears very coriaceous reticulated leaves and solitary, axillary, nodding bell-shaped flowers.

For previous introduction, see S. P. I. No. 11557.

53042. CLEMATIS VITALBA L. Ranunculaceæ. Clematis.

The most vigorous climber of the genus, ascending to 30 feet. It is native to Europe, northern Africa, and the Caucasus; and bears axillary panicles of dull-white flowers followed by fruits with long feathery styles from which it is called "old man's beard."

53043. CLEMATIS VITICELLA L. Ranunculaceæ. Clematis.

The type of one of the leading groups of garden clematis, and one of the parents of the Jackmanii type of hybrids. It climbs to a height of 12 feet; bears entire or 3-parted leaves and blue or purple flowers up to 2 inches in diameter growing singly or in threes. Native to southern Europe.

For previous introduction, see S. P. I. No. 49810.

53044. DELPHINIUM CONSOLIDA L. Ranunculaceæ. Larkspur.

An erect hairy European annual 1 to 1½ feet high, with blue or white flowers in loose panicles.

53045. DOLICHOS LABLAB L. Fabaceæ. Bonavist bean.

An annual ornamental tropical bean climbing to a height of 20 feet, with long erect racemes of rather large purple or white flowers; the pods and seeds are eaten in the Tropics.

53046. ELYMUS ARENARIUS L. Poaceæ. Lyme-grass.

A stout coarse perennial native to the temperate regions of both hemispheres. It is used for binding coast sands. The seed is used by the Digger Indians for food.

Received as *Elymus geniculatus*, which is now referred to *E. arenarius*.

For previous introduction, see S. P. I. No. 24473.

53047. ELYMUS CAPUT-MEDUSAE L. Poaceæ. Lyme-grass.

An erect annual introduced from Europe.

53048. ELYMUS EUROPAEUS L. Poaceæ. Lyme-grass.

A tall European perennial with lax flat blades about half an inch wide and a narrow nodding bristly head 5 to 8 inches long.

Received as *Hordeum europaeum*, which is now referred to *Elymus europaeus*.

53049. ELYMUS GIGANTEUS Vahl. Poaceæ. Lyme-grass.

A grass native to Russia and Siberia.

53050. ELYMUS HIRSUTIGLUMIS Scribn. Poaceæ. Lyme-grass.

Southern wild rye, a grass with stout erect culms 3 to 5 feet high and ascending rough-hairy leaves 8 to 12 inches long.

53051. ELYMUS SIBIRICUS L. Poaceæ. Lyme-grass.

A tall grass with heavy overhanging heads found on fertile flats in higher mountain regions of Chihli Province, China. Of value possibly for grazing.

For previous introduction, see S. P. I. No. 36794.

53031 to 53080—Continued.

53052. ELYMUS VIRGINICUS SUBMUTICUS Hook. Poaceæ. **Lyme-grass.**

A coarse, Rocky Mountain perennial growing on rich low ground. It affords good pasturage and makes a coarse hay.

53053. ERANTHIS HYEMALIS (L.) Salisb. Ranunculaceæ. **Winter aconite.**

An erect perennial hardy herb 5 to 8 inches high, naturalized from Europe. Very desirable for half-shady places for its early show of bright-yellow flowers.

53054. HELLEBORUS FOETIDUS L. Ranunculaceæ. **Hellebore.**

A western European species with true stem 1 foot high, coriaceous leaves, and sepals green or bordered with bright purple, under 1 inch long.

53055 and 53056. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

53055. A tall grass native to the United States, cultivated since prehistoric times for the seed, which has been used for food, for the sweet juice, and for forage.

53056. A tall grass native to the United States, with flat blades and terminal panicles, cultivated for the edible seed, for the sweet juice, and for forage.

53057. HORDEUM NODOSUM L. Poaceæ. **Barley.**
(*H. secalinum* Schreb.)

A perennial grass abundant throughout the western half of the United States.

For previous introduction, see S. P. I. No. 43314.

53058. MILIUM EFFUSUM L. Poaceæ. **Millet grass.**

The only representative of the genus in America, a slender erect perennial 3 to 4 feet tall, found in the cool woods from Nova Scotia to Illinois.

53059. MYOSOTIS ARVENSIS (L.) Hill. Boraginaceæ. **Forget-me-not.**

An annual or biennial erect plant 7 to 20 inches high, native to Europe and Asia, which bears blue or white flowers.

53060. MYOSOTIS SCORPIOIDES L. Boraginaceæ. **Forget-me-not.**
(*M. palustris* Lam.)

The true forget-me-not of Europe and Asia, 6 to 18 inches high. The bright-blue flowers have a yellow eye.

53061. NIGELLA DAMASCENA L. Ranunculaceæ. **Love-in-a-mist.**

A hardy southern European annual 1 to 2 feet high, bearing bright-green finely cut leaves and large white or blue flowers with a very dense and fine involucre.

53062. NONNEA ROSEA (Bieb.) Link. Boraginaceæ. **Rose alkanet.**

For previous introduction, see S. P. I. No. 52883.

53063. PENNISETUM GLAUCUM (L.) R. Br. Poaceæ. **Pearl millet.**
(*P. typhoideum* Pers.)

A robust tropical annual 4 to 8 feet tall, with broad blades and a dense spikelike panicle 1 foot long. It is cultivated for the edible seed, for forage, and for soiling.

53064. POA ALPINA L. Poaceæ. **Spear-grass.**

A good pasture grass native to Kazan Province of the northern Volga region of European Russia.

For previous introduction, see S. P. I. No. 20618.

53031 to 53080—Continued.

53065. POA CAESIA J. E. Smith. Poaceæ. Spear-grass.

A glaucous Eurasian perennial with rather rigid culms 1.5 to 6 decimeters high and rather compact panicles 3 to 7 centimeters long.

53066. POA CHAIXII Vill. Poaceæ. Spear-grass.

A tall relatively coarse species, with rather broad blades and drooping panicles. Native to Europe and Asia Minor.

For previous introduction, see S. P. I. No. 16806.

53067. POLYPOGON MONSPELIENSIS (L.) Desf. Poaceæ. Beard-grass.

A common annual weed on the Pacific coast, with bristly green or yellowish spikes 1 to 6 inches long.

53068. SALVIA PRATENSIS L. Menthaceæ. Sage.

A hardy European perennial 2 feet high, with more or less blood-red maculate leaves and bright-blue or rarely reddish or white flowers 1 inch long.

53069. SECALE FRAGILE Bieb. Poaceæ. Rye.

A bearded grass native to the sandy steppes of Hungary and southern Russia.

53070. SIDALCEA MALVAEFLORA (DC.) A. Gray. Malvaceæ.

An erect or ascending hardy perennial 1 to 6 feet high, with small incised-crenate leaves and purple flowers 2 inches across. Native to California.

53071. STIPA CAPILLATA L. Poaceæ. Feather grass.

A perennial European, ornamental grass less than 2 feet high, used in the making of dry bouquets.

For previous introduction, see S. P. I. No. 20686.

53072. STIPA PENNATA L. Poaceæ. Feather grass.

An ornamental grass native to the steppes of Europe and Siberia. The culms are 2 to 3 feet high and occur in bunches. The panicles are very plumose.

For previous introduction, see S. P. I. No. 30609.

53073. THALICTRUM FLAVUM L. Ranunculaceæ. Meadow rue.

A European stout perennial herb 2 to 4 feet high, with large compound leaves and pale-yellow flowers with bright-yellow anthers.

53074 and 53075. THALICTRUM FLEXUOSUM Bernh. Ranunculaceæ. Meadow rue.

53074. A yellow-flowered perennial 1½ feet high, native to Germany.

53075. Received as *Thalictrum jacquinianum*, for which *T. flexuosum* is an earlier name.

53076. THALICTRUM FOETIDUM L. Ranunculaceæ. Meadow rue.

A white or yellow-flowered perennial three-fourths of a foot high, native to France.

53077. TRITICUM BICORNE Forsk. Poaceæ. Wild wheat.

A tufted annual, native to Egypt and Syria, with culms 30 to 60 centimeters high.

53078. TRITICUM DICOCCUM Schrank. Poaceæ. Emmer.

Supposed to be the original parent of all wheats in the world. It has great drought-resisting qualities and should do well in the arid tracts of the southern United States.

Received as *Triticum amyleum*, which is now referred to *T. dicoccum*.

For previous introduction, see S. P. I. No. 34369.

53031 to 53080—Continued.

53079. TRITICUM AESTIVUM × OVATUM. Poaceæ. **Hybrid wheat.**
(*Aegilops triticoides* Req.)

A European annual 2 feet high with narrow cylindrical spikes of closely appressed awned spikelets.

53080. VIGNA CYLINDRICA (Stickm.) Skeels. Fabaceæ. **Catjang.**

A crop grown for its seeds and also used as a string bean in India.

Received as *Dolichos catjang*, which is now referred to *Vigna cylindrica*.

For previous introduction, see S. P. I. No. 35349.

53081 to 53114.

From Leyden, Netherlands. Seeds presented by Prof. Dr. J. M. Janse, director, Botanic Garden. Received April 15, 1921.

Introduced for experiments with leaf rusts of grains and grasses.

53081. ACONITUM LYCOCTONUM L. Ranunculaceæ. **Monkshood.**

A slender-stemmed perennial 3 to 6 feet high, native to Europe and Siberia, with deeply cut leaves and yellow or whitish flowers.

53082. ACONITUM NAPELLUS L. Ranunculaceæ. **Monkshood.**

The best known and most poisonous species of Aconitum; it is used in medicines. The erect stem is 3 to 4 feet high and the flowers blue. Native to the temperate north.

For previous introduction, see S. P. I. No. 20881.

53083. ACONITUM PANICULATUM Lam. Ranunculaceæ. **Monkshood.**

A European blue-flowered species.

53084. AGROPYRON CANINUM (L.) Beauv. Poaceæ. **Wheat-grass.**

A grass common in timber and timber clearings near Chita, Transbaikal region of eastern Siberia.

For previous introduction, see S. P. I. No. 24475.

53085. AGROPYRON ELONGATUM (Host.) Beauv. Poaceæ. **Wheat-grass.**
(*A. rigidum* Beauv.)

A perennial grass 1½ to 2 feet high, with rough linear leaves. Native to the sandy coasts of the Mediterranean and the alpine summits of Lebanon.

For previous introduction, see S. P. I. No. 17827.

53086. ANTIRRHINUM ORONTIUM L. Scrophulariaceæ. **Snapdragon.**

A slender annual, native to North America, 6 to 12 inches high, with small purple or white flowers.

53087. AQUILEGIA FRAGRANS Benth. Ranunculaceæ. **Columbine.**

A Himalayan plant 6 inches high, with yellow-striped flowers.

53088. ARRHENATHERUM ELATIUS (L.) Beauv. Poaceæ. **Tall oat-grass.**
(*A. avenaceum* Beauv.)

"This is occasionally cultivated in the humid regions of the United States as a meadow grasss under the name of tall oat-grass. It is a fairly satisfactory forage grass." (*A. S. Hitchcock.*)

53089. BERBERIS CRATAEGINA DC. Berberidaceæ. **Barberry.**

A deciduous shrub 5 feet high, with 6 to 10 flowered racemes 1 to 2 inches long and bluish black fruits. Native to Asia Minor.

53081 to 53114—Continued.

53090. BERBERIS HOOKERI Lem. Berberidaceæ. **Barberry.**
(*B. wallichiana* Hook., not DC.)

A deciduous shrub 5 feet high, native to Asia Minor, bearing bluish black fruits.

Received as *B. macrophylla*, which is a horticultural name for *B. hookeri*.

For previous introduction, see S. P. I. No. 49618.

53091. BORAGO OFFICINALIS L. Boraginaceæ. **Borage.**

A coarse hairy annual native to Europe and northern Africa, 2 feet high. The handsome blue flowers make it a widely known bee plant, and the young leaves are used as a potherb and in salad.

53092. BROMUS RIGIDUS Roth. Poaceæ. **Brome-grass.**

A weedy annual 2 feet tall, with hairy foliage and drooping panicles of long awned spikelets. Native to the Mediterranean region and naturalized in the United States.

53093. CERINTHE ALPINA Kit. Boraginaceæ. **Honeywort.**

A perennial with a recurved spike of 5-parted bell-shaped flowers. Native to the Alps and descending along the streams into the plains.

53094. CERINTHE MAJOR L. Boraginaceæ. **Honeywort.**

An ornamental annual 6 to 15 inches high, with showy bracted flowers yellow below and purplish above.

For previous introduction, see S. P. I. No. 53039.

53095. CERINTHE MINOR L. Boraginaceæ. **Honeywort.**

A European plant with yellow or purple-spotted flowers in long racemes.

For previous introduction, see S. P. I. No. 49867.

53096. CLEMATIS VITICELLA L. Ranunculaceæ. **Clematis.**

A southern European clematis which climbs to a height of 12 feet and bears entire or 3-parted leaves and single or 3-clustered blue or purple flowers up to 2 inches across.

For previous introduction, see S. P. I. No. 49810.

53097. DELPHINIUM AMOENUM Stev. Ranunculaceæ. **Larkspur.**

A pale blue-flowered perennial native to Siberia. Flowers in July.

53098. DELPHINIUM CASHMERIANUM Royle. Ranunculaceæ. **Larkspur.**

A Himalayan plant 10 to 18 inches high, with deep azure-blue flowers 2 inches long.

53099. DELPHINIUM ELATUM L. Ranunculaceæ. **Larkspur.**

A European species 2 to 6 feet high, bearing blue flowers with dark-violet petals.

For previous introduction, see S. P. I. No. 13685.

53100. ELYMUS DESERTORUM Kar. and Kir. Poaceæ. **Lyme-grass.**

A grass with flat blades with incurved margins and elongated spikes. Native to Siberia.

53101. HELLEBORUS FOETIDUS L. Ranunculaceæ. **Hellebore.**

A western European species with true stem 1 foot high and green or purple-bordered sepals 1 inch long.

For previous introduction, see S. P. I. No. 53054.

53102 to 53104. HORDEUM DISTICHON PALMELLA Harlan. Poaceæ. **Barley.**

53102. A cultivated variety of 2-rowed barley. Received as *H. distichon*.

53081 to 53114—Continued.

53103. A cultivated variety of 2-rowed barley. Received as *H. distichon nutans.*

53104. A cultivated variety of 2-rowed barley. Received as *H. zeocriton.*

53105. HORDEUM VULGARE TRIFURCATUM (Schlecht.) Beaven. Poaceæ. **Barley.**

A trifurcate, naked, 6-rowed, white, blue, or purple kerneled subspecies, the parent form of trifurcate barleys. Received as *H. aegyceras.*

53106. NIGELLA DAMASCENA L. Ranunculaceæ. **Love-in-a-mist.**

A hardy, southern European annual 1 to 2 feet high, bearing large white or blue flowers.

For previous introduction, see S. P. I. No. 53061.

53107. NONNEA ROSEA (Bieb.) Link. Boraginaceæ. **Rose alkanet.**

An attractive hardy procumbent annual native to the northern Caucasus. The white or purple flowers are funnel shaped.

For previous introduction, see S. P. I. No. 53062.

53108. RANUNCULUS AURICOMUS L. Ranunculaceæ. **Crowfoot.**

A hardy herbaceous perennial 1¼ feet high, with yellow flowers.

53109. SYMPHYTUM OFFICINALE L. Boraginaceæ. **Comfrey.**

A hardy tuberous-rooted perennial 3 feet high, with white, yellowish, purple, or rose flowers in drooping cymes. Native to Europe and Asia.

53110. THALICTRUM ANGUSTIFOLIUM L. Ranunculaceæ. **Meadow rue.**

A hardy herbaceous, yellow-flowered perennial 3 feet high, beautiful as a background for the herbaceous border. Native to Germany.

For previous introduction, see S. P. I. No. 49869.

53111. THALICTRUM DIPTEROCARPUM Franch. Ranunculaceæ. **Meadow rue.**

An erect perennial Chinese herb with large rose-colored flowers and pale-green leaflets, glaucous below.

53112. THALICTRUM FLAVUM L. Ranunculaceæ. **Meadow rue.**

A stout European perennial herb 2 to 4 feet high, bearing pale-yellow flowers with bright-yellow anthers.

For previous introduction, see S. P. I. No. 53073.

53113. TRITICUM BICORNE Forsk. Poaceæ. **Wild wheat.**

A tufted annual with culms 2½ feet long, native to Egypt and Syria.

For previous introduction, see S. P. I. No. 53077.

53114. TRITICUM SPELTA L. Poaceæ. **Spelt.**

The most popular wheat of antiquity and a favorite now in Germany and Switzerland, especially in poor soils. It is less susceptible to disease and to inroads by birds than the beardless varieties.

Received as *T. taanda,* but the sample is spelt.

For previous introduction, see S. P. I. No. 23898.

53115 to 53118.

From Hobart, Tasmania, Australia. Seeds collected by Victor O. Fletcher, Newnham Post Office, near Launceston, and presented by L. A. Evans, acting Director of Agriculture. Received April 30, 1921. Quoted notes by Mr. Evans.

"The soil here is very fertile, but the rainfall is only 14 inches, and we have no recognized rainy season."

53115. DANTHONIA SETACEA R. Br. Poaceæ. **Wallaby grass.**

"A valuable fodder plant if properly cultivated."

Wallaby grass, a perennial grass useful for artificial mixed pasture; it is principally valuable in the spring. (Adapted from *Maiden, Useful Native Plants of Australia, p. 82.*)

53116. FESTUCA BROMOIDES L. Poaceæ. **Fescue grass.**

A slender tufted annual up to 1 foot high, with a one-sided, slender panicle 2 to 6 inches long. (Adapted from *Bailey, Queensland Flora, pt. 6, p. 1917.*)

53117. POA sp. Poaceæ. **Spear grass.**

"Cattle grass."

53118. THEMEDA TRIANDRA Forsk. Poaceæ. **Rooi grass.**

One of the commonest grasses of the drier regions of Africa and a most valuable fodder grass. (Adapted from *Prain, Flora of Tropical Africa, vol. 9, pt. 3, p. 416.*)

For previous introduction, see S. P. I. No. 48787.

53119. MUSA sp. Musaceæ. **Banana.**

From Mount Silinda, Melsetter, Southern Rhodesia, Africa. Shoots presented by Dr. W. L. Thompson, American Board Mission in South Africa. Received May 4, 1921.

"A variety of banana, obtained from the natives, different from any I have ever seen elsewhere. We prize it for its eating qualities, although it is a poor yielder. We imagine that it may have a larger percentage of proteins than ordinary bananas, but have no real proof of it. It may require more tropical conditions for best development." (*Thompson.*)

53120 and 53121.

From Dibrugarh, Assam. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received May 4, 1921. Quoted notes by Mr. Rock.

53120. CARYOTA sp. Phœnicaceæ. **Palm.**

"(Collected in Dibrugarh, along the Brahmaputra River, Assam, February 19, 1921.) This palm, 70 to 80 feet high, is cultivated in Dibrugarh and grows wild on the banks of the Brahmaputra near the Himalayan foothills. It is quite different from *Caryota urens*, especially in its stature; it is much taller, the trunk being 40 feet high. The leaves are shorter but are arranged spirally on the trunk, giving the whole palm a curious appearance. The palm does not die after flowering, as is the case with *C. urens*. The fruiting panicles are much shorter, and the fruits are yellowish when ripe."

53121. GYNOCARDIA ODORATA R. Br. Flacourtiaceæ.
False chaulmoogra tree.

"(Collected in the Bherjan forest, 7 miles from Rangagora in northeastern Assam. February 22, 1921.) *Lemtam.* A tall, handsome tree found in certain forest tracts of northeastern Assam, with dark-green foliage and pendent branches. The trunk is often over a foot in diameter and 60 to 70 feet in height. The bark is lenticellate, while that of *Taraktogenos kurzii* is smooth. The large spherical depressed fruits are borne on the trunk and branches, while those of *T. kurzii*

53120 and 53121—Continued.

are borne on the ends of the branches in the leaf axils. The fruits are exceedingly fragrant when ripe and contain about twenty seeds embedded in shiny, sweet, yellowish pulp. Monkeys are very fond of the fruit flesh, and whole fruits are rarely found unless they be immature."

For previous introduction, see S. P. I. No. 51668.

53122 to 53175.

From Upsala, Sweden. Seeds presented by Dr. O. Juel, director, Botanical Garden. Received April 12, 1921.

Introduced for experiments with leaf rusts of grains and grasses.

53122. ACONITUM LYCOCTONUM L. Ranunculaceæ. **Monkshood.**

A slender perennial reaching a height of 6 feet, with yellow or whitish flowers. Native to Europe and Siberia.

For previous introduction, see S. P. I. No. 53081.

53123. ACONITUM SEPTENTRIONALE Koelle. Ranunculaceæ. **Monkshood.**

An Himalayan plant with pale-yellow or dull-purple flowers. This species yields much of the aconite of European commerce.

For previous introduction, see S. P. I. No. 51746.

53124. AGROPYRON VIOLACEUM (Hornem.) Lange. Poaceæ. **Wheat-grass.**

A perennial grass with culms usually decumbent at the base, 3 to 6 decimeters high. Native to Europe.

53125. AGROSTIS BOREALIS Hartm. Poaceæ. **Bent-grass.**

A European grass with tufted culms 1 to 4 decimeters high.

53126. ALKANNA LUTEA (Desr.) A. DC. Boraginaceæ. **Yellow alkanet.**

A hardy European herb with bluish, trumpet-shaped flowers. Received as *Nonnea lutea*, which is now referred to *Alkanna*.

For previous introduction, see S. P. I. No. 53032.

53127. ANTIRRHINUM ORONTIUM L. Scrophulariaceæ. **Snapdragon.**

A North American annual 6 to 12 inches high, bearing small purple or white flowers.

For previous introduction, see S. P. I. No. 53086.

53128. AQUILEGIA ATRATA Koch. Ranunculaceæ. **Columbine.**

A hardy perennial, native to Europe and Siberia, reaching 2 feet in height and with abundant violet flowers 1 inch long.

53129. AQUILEGIA VIRIDIFLORA Pall. Ranunculaceæ. **Columbine.**

A hardy perennial 1½ feet high, native to eastern Siberia and bearing several greenish flowers.

For previous introduction, see S. P. I. No. 42737.

53130. AVENA MONTANA Vill. Poaceæ. **Oat.**

A grass native to the Pyrenees Mountains.

53131. AVENA NUDA Hoejer. Poaceæ. **Oat.**

Hull-less oats cultivated in China for food and used for making flour.

For previous introduction, see S. P. I. No. 40650.

53132. AVENA STERILIS L. Poaceæ. **Oat.**

Animated oats, occasionally cultivated as a curiosity, the florets when moistened presenting spontaneous movements.

53133. AVENA STRIGOSA Schreb. Poaceæ. **Oat.**

A native of Europe and western Asia cultivated and occurring as a weed in cultivated fields.

For previous introduction, see S. P. I. No. 25364.

53122 to 53175—Continued.

53134. BRACHYPODIUM SYLVATICUM (Huds.) Beauv. Poaceæ. False brome-grass.

A grass native to woods and thickets throughout Europe and eastward through northern Asia to the Provinces of Shengking and Hupeh, China.

For previous introduction, see S. P. I. No. 32446.

53135. BROMUS BRIZAEFORMIS Fisch. and Mey. Poaceæ. Brome-grass.

A handsome ornamental grass 1 to 2 feet high with a one-sided nodding panicle. Native to the Caucasus and Persia.

For previous introduction, see S. P. I. No. 15978.

53136. CERINTHE ALPINA Kit. Boraginaceæ. Honeywort.

For previous introduction, see S. P. I. No. 53093.

53137. CLEMATIS ALPINA (L.) Mill. Ranunculaceæ. Clematis.

A slender plant 3 to 5 feet high, native to northwestern North America, Siberia, and southern Europe. The flowers are bright blue with many petallike stamens.

For previous introduction, see S. P. I. No. 5133.

53138. CLEMATIS ALPINA SIBIRICA (L.) Kuntze. Ranunculaceæ. Clematis.

A white-flowered form of *Clematis alpina*.

For previous introduction, see S. P. I. No. 237.

53139. CLEMATIS FLAMMULA L. Ranunculaceæ. Clematis.

A slender vigorous climber, native to the Mediterranean region. The dark-green leaves remain fresh until midwinter. The small numerous flowers are followed by white-plumed fruits.

For previous introduction, see S. P. I. No. 13925.

53140. CLEMATIS INTEGRIFOLIA L. Ranunculaceæ. Clematis.

A blue-flowered plant native to Hungary.

For previous introduction, see S. P. I. No. 49809.

53141. CLEMATIS PSEUDOFLAMMULA Schmalh. Ranunculaceæ. Clematis.

An herbaceous plant 1 to 2 feet high, growing in open fields in the northern Caucasus. The flowering season is May to June.

53142. DELPHINIUM CASHMERIANUM Royle. Ranunculaceæ. Larkspur.

For previous introduction, see S. P. I. No. 53098.

53143. DELPHINIUM ELATUM L. Ranunculaceæ. Larkspur.

Variety *intermedium*.

A variety of the polymorphous bee larkspur (see S. P. I. No. 53099).

53144. ELYMUS ARENARIUS L. Poaceæ. Lyme-grass.

A coarse perennial grass native to north temperate regions, used to bind coast sand.

For previous introduction, see S. P. I. No. 53046.

53145. ERANTHIS HYEMALIS (L.) Salisb. Ranunculaceæ. Winter aconite.

An erect European perennial 5 to 8 inches high, with bright-yellow flowers in early spring.

For previous introduction, see S. P. I. No. 53053.

53146. HELLEBORUS FOETIDUS L. Ranunculaceæ. Hellebore.

A western European species with a true stem a foot high, and green or purple-bordered sepals 1 inch long.

For previous introduction, see S. P. I. No. 53054.

53122 to 53175—Continued.

53147. HORDEUM SPONTANEUM C. Koch. Poaceæ. **Barley.**

An annular 2-rowed barley which is considered by some to be the wild form of the cultivated 2-rowed varieties. Native to the Caucasus.

For previous introduction, see S. P. I. No. 28885.

53148. LAPPULA MYOSOTIS Moench. Boraginaceæ. **Stickweed.**
(*Echinospermum lappula* Lehm.)

An erect grayish annual 5 to 6 decimeters high, with blue to whitish flowers. Naturalized from Europe.

53149. MELICA CILIATA L. Poaceæ. **Melic grass.**

A half-hardy, ornamental perennial grass native to Europe and northern Africa.

For previous introduction, see S. P. I. No. 16967.

53150. MELICA NUTANS L. Poaceæ. **Melic grass.**

Variety *pallens*.

A rather tall pale ornamental perennial grass native to Europe and northern Asia.

53151. MYOSOTIS ARVENSIS (L.) Hill. Boraginaceæ. **Forget-me-not.**

An annual or biennial erect plant 8 to 20 inches high, which bears blue or white flowers. Native to Europe and Asia.

For previous introduction, see S. P. I. No. 53059.

53152. MYOSOTIS STRICTA Link. Boraginaceæ. **Forget-me-not.**

A tender annual with small blue or whitish flowers. Native to Europe, the Orient, and northern Africa.

53153. NIGELLA DAMASCENA L. Ranunculaceæ. **Love-in-a-mist.**

A hardy southern European annual 1 to 2 feet high, bearing large white or blue flowers.

For previous introduction, see S. P. I. No. 53061.

53154. NONNEA ROSEA (Bieb.) Link. Boraginaceæ. **Rose alkanet.**

An attractive, hardy, procumbent annual native to northern Caucasus. The funnel-shaped flowers are white or purple.

For previous introduction, see S. P. I. No. 53062.

53155. POA ALPINA L. Poaceæ. **Spear-grass.**

A good pasture grass native to Kazan Province, northern Volga region, Russia.

For previous introduction, see S. P. I. No. 53064.

53156. POA CAESIA J. E. Smith. Poaceæ. **Spear-grass.**

A European perennial grass with rather rigid culms 1.5 to 6 decimeters high.

For previous introduction, see S. P. I. No. 53065.

53157. POA CHAIXII Vill. Poaceæ. **Spear-grass.**

A tall, relatively coarse species with rather broad blades and drooping panicles. Native to Europe and Asia Minor.

For previous introduction, see S. P. I. No. 53066.

53158. RANUNCULUS ACONITIFOLIUS L. Ranunculaceæ. **Crowfoot.**

Variety *platanifolius*.

A variety of the common white-flowered buttercup of Europe, with leaves like those of a plane tree.

53159. SESLERIA COERULEA Arduino. Poaceæ. **Moor-grass.**

A hardy, blue-gray perennial grass up to 1½ feet high, native to the British Isles.

53122 to 53175—Continued.

53160. STIPA PENNATA L. Poaceæ. **Feather grass.**

An ornamental grass with plumose panicles borne on culms 2 to 3 feet high which are in bunches. Native to the steppes of Europe and Siberia.

For previous introduction, see S. P. I. No. 53072.

53161. SYMPHYTUM ASPERRIMUM Donn. Boraginaceæ. **Comfrey.**

A coarse European perennial herb with short pricklelike hairs and purple flowers.

53162 to 53173. THALICTRUM spp. Ranunculaceæ. **Meadow rue.**

53162. THALICTRUM ANGUSTIFOLIUM L.

A hardy herbaceous perennial 3 feet high, with pale-yellow flowers, useful as a background for herbaceous borders. Native to Germany.

For previous introduction, see S. P. I. No. 49869.

53163. THALICTRUM AQUILEGIFOLIUM L.

The European "feathered columbine," 1 to 3 feet high, with large hollow stems, white flowers, and purple or white stamens.

53164. THALICTRUM DELAVAYI Franch.

A slender Chinese plant 2 to 3 feet high, with nodding purple flowers half an inch long.

53165. THALICTRUM FENDLERI Engelm.

A rather stout leafy plant native from southern Colorado westward and southward. The flowers are in compact panicles.

53166. THALICTRUM FLAVUM L.

Variety *heterophyllum*.

A European plant 2 to 4 feet high with leaves smaller than in *Thalictrum flavum* and slightly toothed and bearing compound, compact inflorescences of erect pale-yellow flowers.

53167. THALICTRUM FOETIDUM L.

A hardy herbaceous perennial less than a foot high, with white and yellow flowers. Native to France.

53168. THALICTRUM GLAUCUM Desf.

A glaucous southern European perennial herb 2 to 5 feet high, with erect panicles of yellow flowers.

53169. THALICTRUM KEMENSE Fries.

A plant with thin panicles of erect flowers and bipinnate leaves with round, 3-parted leaflets. Native to Europe, Asia, and northern Africa.

53170. THALICTRUM MINUS L.

A species 1 to 2 feet high native to Europe, Asia, and northern Africa, with loose panicles of drooping yellow or greenish flowers.

53171. THALICTRUM MINUS L.

Received as *Thalictrum dubium*, which is now referred to *T. minus*.

53172. THALICTRUM POLYGAMUM Muhl.

A branching species 3 to 8 feet high, with long leafy panicles of white flowers. Native to North America from Newfoundland and Canada to Florida and westward to Ohio.

53173. THALICTRUM SIMPLEX L.

A lilac or yellow-flowered species a foot high, native to Sweden.

53122 to 53175—Continued.

53174. TORRESIA ODORATA (L.) Hitchc. Poaceæ. **Holy grass.**

Holy grass, vanilla grass, or *Seneca grass,* native to Canada and the northern United States. It is sweet scented owing to the presence of coumarin. The Indians use the grass to make fragrant baskets.

Received as *Hierochloe odorata,* which is now referred to *Torresia odorata.*

53175. TROLLIUS EUROPAEUS L. Ranunculaceæ. **Globeflower.**

A hardy herbaceous perennial 15 inches high, with lemon-yellow globular flowers 1 to 2 inches in diameter. Native to wet upland meadows of northern Europe.

53176. DIOSPYROS CONZATTII Standl. Diospyraceæ. **Persimmon.**

From Cerro Espino, Oaxaca, Mexico. Seeds presented by P. C. Standley, United States National Museum. Received May 16, 1921.

"*Zapote negro montés,* collected at Cerro Espino, April, 1921, by Prof. C. Conzatti. The fruit is said to be better than that of *Diospyros ebenaster.*" (*Standley.*)

A tree of particular interest on account of the exquisite flavor of its edible fruit, 4 centimeters in diameter and 2 centimeters long. In quality it is comparable with the *chico-zapote* (*Achras zapota*). It is green skinned and much smaller than the common black sapote. Propagation of this magnificent tree is relatively simple on account of its vigor and the altitude at which it thrives, 1,000 meters above sea level. (Adapted from *Boletín de la Dirección de Estudios Biológicos, vol. 2, No. 3, p. 316.*)

53177 to 53217.

From Ecuador, Collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received April 6, 1921. Quoted notes by Mr. Popenoe.

53177. BERBERIS QUINDUENSIS H. B. K. Berberidaceæ. **Barberry.**

"(No. 585a. Hacienda La Esperanza, near El Angel, Province of Carchi, Ecuador. February 15, 1921.) Seeds of *Espino.* A very pretty species of Berberis, similar to one obtained in Cundinamarca. From the mountains of Carchi Province, at about 12,000 feet elevation. This is one of the handsomest wild barberries I have seen in Ecuador. It makes an arborescent shrub up to 10 or 12 feet high, and has large, glossy, stiff, dark-green leaves. The flowers, which are produced in racemes about 3 inches long, are orange-yellow and half an inch broad. They are followed by small clusters of oval, blue-black fruits. The species is worthy of a trial in the southern United States, where it may prove to be of value as an ornamental."

53178. ONOSERIS SALICIFOLIA H. B. K. Asteraceæ.

"(No. 582a. Conraqui, near Ibarra, Ecuador. February 10, 1921.) Seeds of a low-growing, delicate plant which is abundant on dry rocky slopes in northern Ecuador at altitudes of 6,000 to 9,000 feet. It rarely surpasses 8 inches in height; the lively pink, daisylike flowers, about 2 inches broad, are borne on slender stems rising a few inches above the foliage. It flowers profusely and is recommended for trial as a border plant in the United States. It can probably be cultivated as an annual, though here it is, I believe, at least a biennial and probably a perennial."

53179. CHUQUIRAGA INSIGNIS Humb. and Bonpl. Asteraceæ.

"(No. 587a. Hacienda La Rinconada, Province of Carchi, Ecuador. February 15, 1921.) Seeds of *Chuquiragua,* from the páramo at an altitude of about 12,000 feet in Carchi Province. This plant, abundant on the high páramos of Ecuador, is said to have been sacred to the Incas. It is an unusually handsome thing and seems to me worthy of cultivation in other countries as an ornamental. It is a slender, half-shrubby plant, stiffly erect in habit, and reaching to 6 feet in height.

53177 to 53217—Continued.

The stems are clothed with narrow, stiff, sessile leaves of glossy dark-green color and are surmounted by heads of brownish orange flowers. The plant is noted in Ecuador because of the fact that its leaves will burn when green. The flower heads retain their color even when dry. The species will probably prefer a moist, rather cool climate such as that of the Pacific Northwest."

53180. PASSIFLORA MALIFORMIS L. Passifloraceæ. **Granadilla.**

"(No. 583a. Ibarra. Ecuador. February 14, 1921.) Seeds of *Granadilla de hueso*, grown in the valley of the Rio Chota, in northern Ecuador, at an altitude of about 6,000 feet. This species is a vigorous climber with ovate-cordate, light-green leaves about 3 inches long. The flowers have a large, conspicuous, whitish green calyx, and the corona is white, marked with purplish blue. The fruits are round, rarely more than 2 inches in diameter, with a thin shell yellowish green on the surface and whitish within. Though not more than an eighth of an inch thick, this shell is so hard that it is broken with difficulty. Within it are numerous small black seeds, each surrounded by juicy pulp of pale, orange-yellow color, and acid, highly aromatic flavor, similar to that of *Passiflora edulis*. The fruit is eaten out of hand and is a good one, worthy of cultivation in California and Florida, if it proves to be suitable for those States."

For an illustration of this new passion fruit from Ecuador, see Plate I.

53181. TACSONIA QUITENSIS Benth. Passifloraceæ.

"(No. 600a. From mountains near El Angel, Province of Carchi, Ecuador.) Seeds of *tacso*. From an elevation of about 12,000 feet. This wild plant much resembles the cultivated *T. mollissima* in foliage, flower, and fruit. It grows abundantly in ravines and among brush at high altitudes in northern Ecuador. The fruits are not much used by the natives, though they seem nearly as good as those of the cultivated *tacso*."

53182 to 53185. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

53182. "(No. 573. Hacienda San Vicente, Province of Carchi, Ecuador. February 17, 1921). Budwood of avocado No. 47. *Tamayo*. The parent tree stands in one of the huertas of the hacienda about half a mile north of the house at an altitude of 6,100 feet. This variety, so far as can be judged by an examination of the parent tree, is either a very unusual Mexican or else a hybrid between the Mexican and West Indian races. The fruit is of good size (about 18 ounces in weight) and of convenient oval form. In appearance it is fairly attractive, being smooth, with the surface light green, washed or overspread with maroon purple at the stem end. The skin is not woody; it resembles both in thickness and texture that of such large-fruited Mexican varieties as *Puebla* and *Gottfried*. The flesh is cream colored, with a very few inconspicuous fiber markings. The quality is very good. The seed is small and tight in the cavity. The tree appears to bear fair, but not heavy, crops.

"Formal description: Parent tree about 35 feet high, the trunk 18 inches thick at the base, dividing about 8 feet above the ground, and giving off the first branches at 12 feet. Crown oval, slender, open. Foliage when crushed has a very faint aniselike odor scarcely detectable.

"The fruit is broadly oval to obovoid in form; weight about 18 ounces; length about 4 inches and greatest breadth about 3¾ inches; base slightly tapering, the stem inserted to one side; apex very slightly and obliquely flattened; surface smooth, light green with numerous whitish green dots, and overspread with maroon purple or dull purple around the stem; skin thin, like that of the largest fruited Mexican varieties, rather tender; flesh cream

53177 to 53217—Continued.

colored, tinged green in a narrow zone close to the skin, with a few fiber markings but no tough fibers, the flavor rich and pleasant; quality good; seed relatively small, obovoid in form, tight in the cavity, with both seed coats rather closely surrounding the rough cotyledons. Principal season at San Vicente probably January and February.

"Because of the absence of well-defined seasons in the Chota Valley, where this and the following varieties are grown, avocado trees do not limit themselves to one crop during the year, but flower and fruit more or less continuously. For this reason it is not possible to calculate even approximately the season at which the Chota avocados will ripen in California or in Florida. This matter will have to be determined by trial.

"This variety is one of the most promising of the set obtained in the Chota Valley and is strongly recommended for trial throughout the avocado-growing regions of California and in the northern part of the avocado zone of Florida. It will probably prove to be hardier than the West Indian varieties."

53183. "(No. 575. Hacienda San Vicente, Province of Carchi, Ecuador. February 17, 1921.) Budwood of avocado No. 49. *Egas.* The parent tree stands in one of the huertas at the Hacienda San Vicente, about half a mile north of the house. This is a Mexican avocado, of much the same general character as *Puebla,* but having a relatively smaller seed than the latter. The fruit is broadly obovoid, 8 to 12 ounces in weight, and glossy maroon purple when fully ripe. The skin is of average thickness for a large-fruited Mexican avocado, the flesh devoid of fiber and of good quality. The seed is tight in the cavity; in some specimens it is very small, in others, medium sized. The parent tree is a very old and large one and is said to be very productive.

"Formal description: Parent tree 60 to 70 feet high, with the trunk 6 feet thick at the base and giving off a number of large branches 6 feet above the ground. The crown is broadly oval, fairly dense, and the foliage when crushed has a faint aniselike odor.

"The fruit is obovoid to broadly obovoid; weight from 6 to 12 ounces; length, 3½ to 4 inches; greatest breadth, 2½ to 3 inches; base broad, with the stem inserted somewhat obliquely in a moderately deep cavity; apex flattened obliquely, though not conspicuously so; surface smooth, glossy, deep-maroon purple, with very small light-maroon dots; skin thin, not very tough; flesh cream colored, devoid of fiber and with only very faint fiber markings, the flavor rich and pleasant; quality good; seed small to medium sized, broadly ovoid to almost oval, tight in the cavity with both seed coats closely surrounding the nearly smooth cotyledons. Season, December to February at San Vicente, with a few fruits maturing at other times of the year because of the peculiar climatic conditions of the region.

"Not as promising as avocado No. 47, but worthy of trial in California and Florida."

53184. "(No. 576a. Hacienda San Vicente, Province of Carchi. February 17, 1921.) Budwood of avocado No. 50. *Chota.* The parent tree stands in one of the huertas of the Hacienda San Vicente, about half a mile north of the house. This is a fine large Mexican avocado of attractive and convenient form, having a small seed and flesh of rich, pleasant flavor. The form is broadly elliptic to nearly round, the color deep purple when the fruit is fully ripe, and the seed tight in the cavity. This may possibly be a hybrid between the Mexican and West Indian, but I can see no definite indication that such is the case.

"Formal description: Parent tree 50 to 60 feet high, the trunk 3 feet thick at the base, branched at 10 feet above the ground. The crown is round, fairly dense, and the aniselike odor of the crushed leaves is fairly pronounced.

A HARD-SHELLED PASSION FRUIT FROM TROPICAL AMERICA. (PASSIFLORA MALIFORMIS L.; S. P. I. No. 53180.)

Several species of Passiflora are cultivated in the Tropics for their edible fruits as well as for the ornamental value of the plants themselves, which usually bear attractive flowers and are excellent for covering arbors and fences. One of the most interesting species is *Passiflora maliformis*, whose fruits are so hard-shelled that they must be broken with a club or some heavy instrument. The juicy flesh which surrounds the small black seeds is acid and highly aromatic. It is often used to prepare a refreshing drink. (Photographed by Wilson Popenoe, Ibarra, Ecuador, May 25, 1921; P18582FS.)

THE PARENT TREE OF THE CARCHI AVOCADO. (PERSEA AMERICANA MILL.; S. P. I. No. 53185.)

In the remote Andes of northern Ecuador lies a small region known as the Chota Valley. The Mexican avocado was introduced into this valley at an early day, and through selection and, probably, crossing with the lowland or West Indian race of avocados, many superior forms have been developed. These remained horticulturally unknown until 1921, when they were discovered by a representative of the United States Department of Agriculture and several of the best obtained for trial in the United States and other countries. As in other parts of tropical America there are few avocado orchards in Ecuador, most of the trees being found about the homes of the inhabitants or scattered among other fruit trees in small irregular plantings. (Photographed by Wilson Popenoe, San Vicente, Ecuador, February 18, 1921; P18414FS.)

THE CARCHI AVOCADO, A VARIETY OF THE MEXICAN RACE. (PERSEA AMERICANA MILL.; S. P. I. No. 53185.)

This avocado, which belongs to the Mexican race in spite of the fact that it was found in a remote valley of northern Ecuador, seems worthy of trial in the United States because of its relatively large size and its excellent quality. It may prove hardier than most varieties of the Guatemalan race and therefore valuable for those parts of California and Florida which are subject to heavy frosts. (Photographed by Wilson Popenoe, Ibarra, Ecuador, February 19, 1921; P18426FS.)

THE YUNGARA POTATO. ONE OF THE BEST VARIETIES OF THE ECUADORIAN HIGHLANDS. (SOLANUM TUBEROSUM L.; S. P. I. No. 53195.)

The Andean region, native home of the potato, contains many cultivated forms of interest and possible value to plant breeders. Some may prove useful in the development of early or late varieties; others may be found blight resistant; and still others are valuable for their excellent flavor and quality. Many have been introduced into the United States for trial. Yungara, a productive and late-maturing sort and one of the principal commercial varieties of Ecuador, where it is cultivated at altitudes between 10,000 and 12,000 feet, may be taken as an example of the best sorts which have been produced in the Andes. (Photographed, natural size, by Wilson Popenoe, Ambato, Ecuador, January, 1921; P18334FS.)

53177 to 53217—Continued.

"The fruit is broadly elliptic, oval, or nearly round; weight about 10 ounces; length about 3¾ inches, greatest breadth about 3½ inches; base rounded to bluntly pointed, with the stem inserted slightly to one side of the center; apex very slightly and obliquely flattened; surface smooth, somewhat glossy, dark purplish maroon to purple, with large, pale maroon-colored dots; skin of average thickness for a large-fruited Mexican avocado; flesh rich cream colored, with fiber markings and even a few tough fibers in some specimens, while others have none at all; flavor rich and pleasant; quality good; seed small, round-ovoid, tight in the seed cavity, with both seed coats surrounding closely the slightly rough cotyledons. Principal season of ripening at San Vincente from February to April.

"Numerous specimens of this variety were examined; some of them were of excellent quality, while others had objectionable fiber in them. The difference may have been due to variation in the stage of maturity. If the variety, when grown in the United States, produces fruits which, at the proper stage of ripeness, are quite free from fiber, it should prove to be a genuine acquisition. The flavor is rich and the flesh very abundant."

53185. "(No. 577. Hacienda San Vicente, Province of Carchi. February 17, 1921.) Budwood of avocado No. 51. *Carchi*. The parent tree is growing in one of the huertas of the Hacienda San Vicente, about half a mile north of the house. This variety, except for its color, might be called a Mexican Trapp. It has the form of the latter, and it also has a seed somewhat larger than the ideal; but if the size of the fruit increases when the variety is given the advantage of good culture in the United States, it may prove to be a valuable sort. The fruit is oblate, about 8 ounces in weight, purple when ripe, with yellow flesh of good flavor and quality. The seed is sometimes loose in the cavity.

"Formal description: Parent tree 30 feet high, the trunk 18 inches thick at the base and branching at 8 feet above the ground. The crown is round, dense, with the foliage of peculiar wrinkled appearance. The leaves when crushed have a pronounced aniselike odor.

"The fruit is oblate, sometimes oblique; weight about 8 ounces, length about 2¾ inches; base rounded to slightly flattened, the stem inserted obliquely; apex conspicuously and usually somewhat obliquely flattened; surface smooth, dull purple in the fully ripe fruit, with large dots of lighter purple; skin of about average thickness for a large-fruited Mexican avocado; flesh yellow, tinged with pale green close to the skin, nearly free from fiber markings, the flavor rich and pleasant; quality good; seed large, oblate, tight in the cavity, with both seed coats adhering closely to the nearly smooth cotyledons; occasionally the seed coats separate. Principal ripening season at San Vicente from January to March."

For an illustration of the parent tree of the Carchi avocado, see Plate II. Fruits of the Carchi avocado are shown in Plate III.

53186. RUBUS ROSEUS Poir. Rosaceæ. **Raspberry.**

"(No. 584a. Hacienda La Esperanza, near El Angel, Province of Carchi, Ecuador. February 15, 1921.) Seeds of *Mora de Rocota*. A rare berry from an altitude of 12,000 feet. It is nearly round, red, 1½ inches in diameter, and of good quality. The fruits are much like those of the Colombian berry (*Rubus macrocarpus*) in general appearance, but smaller and better in quality. This species seems to be the same as the *Huagra-mora*, from the slopes of the Volcano Tungurahua at an altitude of about 9,000 feet, and the *mora* which grows in the Cordillera de Zamora, in Loja Province. The plant is not a large grower. It forms clumps about 5 feet high, or sometimes scrambles over other plants, its canes reaching to about 8 feet in length. The

53177 to 53217—Continued.

leaves are trifoliolate, with glossy, oval to oblong-acute, serrate leaflets, often having a maroon tinge. The rosy purple flowers, about 1½ inches broad, are borne few in a cluster; they are followed by oval or conical fruits 1 to 1½ inches long, crimson in color, juicy, and of pleasant subacid flavor. The seeds are not objectionably large nor hard. The plant is not very productive. This raspberry is worthy of a careful trial in the southern and far western parts of the United States, where it seems likely to succeed. Its productiveness can probably be increased by systematic pruning."

53187. SOLANUM sp. Solanaceæ. **Potato.**

"(No. 586. Hacienda La Rinconada, Province of Carchi, Ecuador. February 15, 1921.) Tubers of a wild potato from the mountains of Carchi, at an altitude of 12,000 feet. It grows abundantly in certain places, preferring the protection of shrubby vegetation along ravines on the páramo. The plant resembles that of the cultivated potato; the tubers, however, are rarely more than an inch long by half an inch in thickness, and they are whitish brown in color, with white flesh. They are not used by the inhabitants of this region. The plants appear to be attacked by late-blight, as are cultivated potatoes in the same region."

53188 to 53197. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

53188. "(No. 589. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) Tubers of *Cumara* grown at altitudes of 11,000 to 12,000 feet. This is a good variety, of commercial importance only slightly less than that of the *Cuerudas*. The tubers are long, almost white in color, with purplish areas around the deep eyes."

53189. "(No. 590. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) Tubers of *Morada* from the Province of Carchi, where it is cultivated at altitudes of 11,000 to 12,000 feet. This is a variety of good quality, but of little commercial importance. The tubers are rather small, round, and dark purple."

For previous introduction, see S. P. I. No. 35507.

53190. "(No. 591. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) Tubers of *Cueruda morada* (purple Cueruda), from the Province of Carchi, where it is cultivated at altitudes of 11,000 and 12,000 feet. Commercially one of the best and most important varieties in northern Ecuador, though it is not quite so extensively grown as *Cueruda blanca*. The tubers are oval, flattened, and purple with whitish areas around the shallow eyes; they possess excellent keeping qualities."

53191. "(No. 592. Hacienda La Rinconada, Province of Carchi, Ecuador.) Tubers of *Margarita*, from the Province of Carchi, where it is cultivated at altitudes of 10,000 and 12,000 feet. This is an important commercial variety, especially in the vicinity of Ibarra; the plants are, however, very susceptible to late-blight. The tubers are oval, flattened to an unusual degree, and of good size. The surface is pale whitish brown, with fine purplish markings, and the eyes are scarcely noticeable. The flesh is white, of excellent quality."

53192. "(No. 594. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) Tubers of the *Rosa* potato, cultivated in the Province of Carchi, at altitudes of 11,000 to 12,000 feet. This is not an important or well-known variety. The tubers are oval, slightly flattened, deep rose in color, with shallow eyes."

53193. "(No. 595. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) Tubers of *Cueruda blanca* (white Cueruda), cultivated in the Province of Carchi, at altitudes of

53177 to 53217—Continued.

11,000 and 12,000 feet. This is the most important commercial potato of Carchi Province. At Ibarra, where it is one of the favorite varieties in the market, it is known as *Pastuza*. It yields heavily, and the whitish brown, somewhat flattened, oval tubers are of good size and quality. The eyes are very shallow and not numerous."

53194. "(No. 596. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) Tubers of *Leche*, cultivated at altitudes of 11,000 to 12,000 feet. This is a good variety, of some commercial importance, especially in the vicinity of Ibarra. It yields heavily, and the round, whitish brown, rather large tubers are of good quality. They have, however, rather deep eyes."

53195. "(No. 597. Ibarra, Ecuador. February 12, 1921.) Tubers of *Yungara*, from the Hacienda La Rinconada, in the Province of Carchi, where it is cultivated at altitudes of 10,000 to 12,000 feet. This is probably the same as the Yungara of Ambato, but is not as important commercially in northern Ecuador as it is in the latter region. This productive and late-maturing variety yields oblong, medium-sized tubers, light rose colored with yellow areas around the few and not very deep eyes. The flesh is white and of good quality; the plant is not resistant to late-blight."

For an illustration of tubers of the Yungara potato, see Plate IV.

53196. "(No. 598. Ibarra, Ecuador. February 12, 1921.) *Pastuza*, from the Hacienda La Rinconada, in the Province of Carchi, where it is cultivated at altitudes of 11,000 and 12,000 feet; it is one of the favorite varieties in the market at Ibarra. This is probably the same variety as *Cueruda blanca* (white Cueruda). This is the most important commercial potato of Carchi Province. It yields heavily, and the whitish brown, somewhat flattened, oval tubers are of good size and quality. The eyes are very shallow and not numerous."

53197. "(No. 593. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) *Amarga*, cultivated in the Province of Carchi, at altitudes of 11,000 and 12,000 feet. This is not an important or well-known variety. Its tubers are of irregular shape, rather small, pale rose in color, with deep eyes."

53198. JUGLANS sp. Juglandaceæ. **Walnut.**

"(No. 599a. Ibarra, Ecuador.) The *tocte* (black walnut) of northern Ecuador. Seeds obtained in the market of Ibarra. There are probably two species of Juglans in Ecuador which go under this name; one of them is *J. peruviana*, the other as yet undescribed. Both are found in the highlands, between altitudes of 6,000 and 10,000 feet; one or the other is abundant in nearly every town of the Sierra. The tree is sometimes called *nogal*, as well as *tocte;* the fruit is always known by the latter name.

"Luis Cordero (Enumeración Botanica) says of this tree in the Province of Azuay: 'It is most useful, since it furnishes, aside from its grateful fruit and its fine, solid, and beautiful wood, a tonic of probable efficacy, obtained from boiling the leaves.' The plant is much used by the Indians of Imbabura Province in the preparation of dyes.

"The *tocte* is abundant at Ambato. It can scarcely be termed a cultivated species in this region, since it is not commonly planted; but trees which spring up around cultivated fields and in dooryards are allowed to grow unmolested, and the fruit is utilized in a small way. The plant strongly resembles *Juglans nigra*, but the foliage is perhaps larger. The nuts are an inch and a half in diameter, with a very thick, bony shell deeply corrugated on the surface and a kernel of mild, pleasant flavor. Recently the species has been utilized in Ambato as a stock plant on which to graft *Juglans regia*.

53177 to 53217—Continued.

"In Ibarra the *tocte* is very abundant, and the nuts are commonly sold in the market. They are used to prepare a famous sweetmeat, the 'nogada' of Ibarra, made from brown or white sugar, milk, and walnut meats. At Otavalo the tree is quite abundant, as also in the southern part of Ecuador at Loja and Cuenca. The two species which go under this name are very similar in character."

53199 to 53215. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"(No. 580a. Ibarra, Ecuador. February 18, 1921.) *Torta.* A peculiar bean occasionally cultivated at Ibarra. The vine, which is slender, climbs over fences and low vegetation; the thin beans, resembling a Lima bean in size and outline, are curiously marked with various colors. They are not commonly eaten in this region, but are used by the children in playing various games. They may be of interest to our plant breeders because of the remarkable color combinations which they exhibit.

"They are not eaten here, though I am inclined to think they are edible."

53199. Black.

53200. Dark brown.

53201. Dark maroon flushed with black.

53202. Burgundy.

53203. Reddish brown with black flecks.

53204. Light tan.

53205. Blackish brown with a cream splotch.

53206. Black with stripes and splotches of yellowish green.

53207. Lemon yellow with black stripes.

53208. Cream with brown stripes.

53209. Cream with Burgundy stripes.

53210. Grayish white flushed with dark brown.

53211. Cream with black spots and black end.

53212. Cream with one end black.

53213. Cream with black ring around hilum.

53214. Lemon yellow with Burgundy spots and end.

53215. One half of surface dark brown; other half cream with brown spots.

53216. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

"(No. 588. Hacienda La Esperanza, near El Angel, Province of Carchi, Ecuador. February 14, 1921.) Tubers of *Papa chaucha.* An unusually early variety from an altitude of nearly 12,000 feet. The *chauchas* (Quichua, early) are a group of potatoes cultivated in the Ecuadorian highlands at altitudes of 8,000 to 12,000 feet. Commercially they are not very important, due to the fact that they do not keep as well as other varieties, but they are much cultivated for home use. The tubers are of good size; those of some varieties are of good quality, while others are rather inferior. The color of both surface and flesh is variable.

"The chauchas mature in about five months from the time of planting, when cultivated at an elevation of 12,000 feet; other varieties require seven to eight months. As soon as the plants come into bloom the tubers are considered to be mature and are dug for eating. Unlike other varieties, which must be dug and then stored for a period before they are resown, the chauchas can be resown immediately after digging. The yield is fairly heavy, but not as great as that of some of the late-maturing varieties.

53177 to 53217—Continued.

"Several varieties were mixed together in the lot sent under this number; none of them, however, is of the very best quality."

53217. ZEA MAYS L. Poaceæ. **Corn.**

"(No. 581a. Ibarra, Ecuador. February 19, 1921.) *Chulpi sara* (Quichua, wrinkled corn), from the market of Ibarra. A genuine sweet corn, the first I have found in tropical America. This is a native sweet corn, cultivated in the mountains of Ecuador at altitudes of about 7,000 to 9,000 feet. The ears are commonly 4 to 8 inches long, with the grains golden brown and wrinkled when dry. It is a variety not commonly seen in this region, but occasionally cultivated by the Indians. It may perhaps be useful in producing a variety of sweet corn for the warmer regions of the United States."

53218 and 53219. RUBUS spp. Rosaceæ.

From Ecuador. Seeds collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received April 21, 1921. Quoted notes by Mr. Popenoe.

53218. RUBUS ROSEUS Poir. Rosaceæ. **Raspberry.**

"(No. 602a. Upper slopes of the Volcano Tungurahua. March 10, 1921.) *Huagra-mora.* A choice large-fruited wild red raspberry from an altitude of 9,000 feet. Since this is found at altitudes of 9,000 to 12,000 feet, it may prove hardier than many of the other species we have obtained in these countries. The fruits are much like those of the Colombian berry (*R. macrocarpus*) in general character, but small and better in quality. They are up to about an inch and a half in length, deep red, and of very good flavor."

For previous introduction, see S. P. I. No. 53186.

53219. RUBUS ADENOTRICHOS Schlecht. Rosaceæ. **Blackberry.**

"(No. 603a. Upper slopes of the Volcano Tungurahua. March 10, 1921.) *Pondoa.* A wild blackberry which is a better fruit than many of the other wild blackberries of Ecuador. This is the common *mora* of the settlement known as Pondoa, which lies upon the slopes of the Volcano Tungurahua at an altitude of 7,500 to 8,500 feet. This is a vigorous species of Rubus, sending up stiff canes to a height of 15 feet. It does not climb, as a rule, but the stems frequently bend over and are supported by near-by vegetation. The leaflets are five in number, or sometimes three when the leaves arise from small shoots. The canes are clothed with stiff wine-red hairs. The racemes are often a foot in length; the flowers are rather small and pinkish white. The fruits are produced abundantly; they are oval to nearly round, about three-fourths of an inch long, purplish black when fully ripe, each one composed of many small drupelets set closely together. The flavor is rich and agreeably subacid; the seeds are soft and not troublesome in the mouth. This may be considered an excellent blackberry and one which merits horticultural attention. It should be tested in the southern and western portions of the United States."

53220 to 53225. RIBES VULGARE Lam. Grossulariaceæ.

Garden currant.

From Winchester, England. Plants purchased from Millier & Sons. Received April 25, 1921. Quoted notes by Millier & Sons.

53220. "*New Red Dutch.*"

53221. "*Raby Castle.*"

53222. "*Scotch Red.*"

53223. "*White Dutch.*"

53224. "*White Transparent.*"

53225. "*White Versailles.*"

53226 to 53231. RIBES VULGARE Lam. Grossulariaceæ. **Garden currant.**

From Middle Green, England. Plants purchased from J. C. Allgrove, Langley, near Slough. Received April 25, 1921. Quoted notes by Mr. Allgrove.

53226. "*Fay's Prolific.*" 53227. "*Raby Castle.*"

For previous introduction, see S. P. I. No. 53221.

53228. "*Red Dutch.*"

A red-fruited variety with folded or cupped leaves which are not markedly thick or coarse. (Adapted from *Proceedings of the American Society for Horticultural Science, 1917, p. 65.*)

53229. "*White Dutch.*"

A white-fruited variety with folded or cupped leaves which are not markedly thick or coarse. (Adapted from *Proceedings of the American Society for Horticultural Science, 1917, p. 65.*)

For previous introduction, see S. P. I. No. 53223.

53230. "*White Dutch,* cut leaved."

53231. "*White Versailles.*"

A white-fruited variety with flat leaves not markedly thick or coarse and lightly pubescent on the lower surface. (Adapted from *Proceedings of the American Society for Horticultural Science, 1917, p. 65.*)

For previous introduction, see S. P. I. No. 53225.

53232 to 53237. RIBES VULGARE Lam. Grossulariaceæ. **Garden currant.**

From Bourg la Reine, Seine, France. Plants purchased from Nomblot-Bruneau. Received April 27, 1921. Quoted notes by Nomblot-Bruneau.

53232. "*Cerise blanche.*"

53233. "*Cerise rouge.*"

53234. "*Hollande blanche.*"

For previous introduction, see S. P. I. No. 53229.

53235. "*Hollande rouge.*"

For previous introduction, see S. P. I. No. 53228.

53236. "*Versaillaise blanche.*"

For previous introduction, see S. P. I. No. 53231.

53237. "*Versaillaise rouge.*"

53238. CAJAN INDICUM Spreng. Fabaceæ. **Pigeon-pea.**

From Santiago de las Vegas, Cuba. Seeds presented by Dr. Mario Calvino, director, Estación Experimental Agronómica. Received April 29, 1921.

"*Cyandul.*" (*Calvino.*)

This named variety was introduced for experimental use in the Office of Forage-Crop Investigations.

53239. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. **Barley.**

From Bengazi, Libia, Africa. Seeds presented by the director of Economic and Financial Affairs, Servizi Agrari, Governo della Cirenaica. Received April 30, 1921. Quoted notes by the director.

"Barley grown in Cyrenaica under conditions of the greatest aridity."

53240 and 53241.

From Montevideo, Uruguay. Seeds presented by Sr. R. Salgueiro Silveira, Técnico del Laboratorio Agronómico. Received May 3, 1921. Quoted notes by Sr. Salgueiro.

53240. HELIANTHUS ANNUUS L. Asteraceæ. **Sunflower.**

"A plant cultivated here, of great importance for its seeds from which is extracted an edible oil, which is also useful in the paint industry. The red variety, which is 2 meters high, is used as props for tomatoes. Sheep and birds eat the seeds, and the stalks are burned and used as fertilizer."

53241. PHALARIS BULBOSA Jusl. Poaceæ. **Canary grass.**

"Seeds harvested in this country. The grass is of great food value."

A perennial tufted grass, with shiny leaves about two-fifths of an inch wide and roots penetrating the soil to a depth of nearly 3 feet; native to the Mediterranean countries. It is now cultivated in New South Wales, where it appears to be an excellent permanent winter grass for coastal and table-land districts. Owing to its deep roots it can endure a considerable amount of drought. Seeds are borne very sparsely on short stems thrown up from the center of the crown.

For previous introduction, see S. P. I. No. 44696.

53242. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

From Montevideo, Uruguay. Seeds presented by Sr. R. Salgueiro Silveira, Técnico del Laboratorio Agronómico. Received April 25, 1921.

"Seeds, harvested in this country, of a castor-bean which I recommend." (*Salgueiro.*)

53243. PERSEA sp. Lauraceæ.

From Darjiling, India. Seeds secured by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received May 10, 1921.

"Bought March 4, 1921, in the Darjiling market from Tibetans, who are very fond of it. The fruits are green and the size of a small tennis ball, perfectly round; the flesh is like that of the avocado, both in color and taste. The fruit and seed are entirely different in shape from those of the avocado. These fruits come from an altitude of 7,000 feet and should therefore be quite resistant to light frosts, since there was plenty of snow at Darjiling this winter." (*Rock.*)

53244 to 53261.

From Quedlinburg, Germany. Seeds purchased from Carl Beck & Co. Received May 6, 1921.

Introduced for experimental work at the request of department specialists.

53244. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

Turkische Prunk oder Feuer.

53245 to 53261. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53245. *Don Carlos.*
53246. *Flageolet oder Pariser.*
53247. *Flageolet oder Pariser, weisse.*
53248. *Hinrichs Riesen.*
53249. *Hinrichs Riesen.*
53250. *Juli.*
53251. *Kaiser Wilhelm.*
53252. *Mont d'or.*
53253. *Phänomen.*
53254. *Schlachtschwert.*
53255. *Schlachtschwert.*
53256. *Schmalzgrosse.*
53257. *Wachs-Dattel.*
53258. *Wachs Flageolet.*
53259. *Zehwochen.*
53260. *Zucker-Butter-Brech.*
53261. [Unlabeled.]

53262. OCHROMA LAGOPUS Swartz. Bombacaceæ. **Balsa.**

From Camaguey, Cuba. Seeds presented by John R. Johnson, through Dr. R. L. Luaces, director, Granja Escuela. Received May 9, 1921.

"I believe that this tree will produce very well at Miami, for the flowers form during March." (*Luaces.*)

A West Indian tree 18 meters high with brown tomentose to nearly glabrous, obscurely 3 to 5 lobed leaves 15 to 20 centimeters long, and yellowish white flowers 10 centimeters long. The utilization of the wood of Ochroma has brought that genus into prominence during the last few years. The manufacture of buoyancy and insulation products, such as life rafts, refrigerators, and parts of lifeboats and airplanes, especially in connection with the war, has become very extensive. Eighty thousand floats made of balsa wood were used in constructing the 250-mile submarine mine barrage in the North Sea; war vessels as well as transports were in so far as possible equipped with balsa life rafts and lifeboats; and special refrigerating trucks with balsa as the insulating material were used in France. The wood of the trees of this genus is the most notable among light-weight woods. It is generally known in Spanish America as "balsa," and that word has been transferred to and is in general use in the United States. Balsa is the Spanish word for raft, and it was applied to this tree because the Spanish colonists, when they migrated to the New World, found it in use by the natives for rafts.

Balsa is a very common and conspicuous tree in tropical America. It is distinguished not only by its light soft wood, but also by its large simple leaves, large solitary flowers, and very conspicuous fruit, which is not unlike a cotton boll on a large scale. When the fruit is matured, but has not finally burst, it looks much like a rabbit's foot and presumably from this the first species of Ochroma to be described received the specific name "lagopus." When the fruit finally bursts and the mass of down falls to the earth, it suggests the fur of a rabbit. The seeds are enveloped in this fur and are disseminated by it. They resemble small grape seeds and, unlike cotton, the "down" is not firmly and permanently attached to the seed.

The species of this genus most frequently occur in the lowlands and foothills, though rarely, if ever, where the soil is at all affected by brackish or salt water. They have not been discovered in the higher altitudes, that is, at more than 1,000 meters above sea level.

Balsa is usually a second-growth tree, though it does occur as an isolated tree in the primeval forest. It appears promptly and abundantly where clearings have been made by natural agencies, such as floods and fires, or by human cultivations. In this respect it might properly be called a tree "weed." The natural seeding in some places produces such an abundance of young plants as to suggest weeds in a neglected garden. The tree's growth is very rapid. In the natural state the wood is very perishable. One rarely sees the remains of trees of balsa in the tropical forests. They decay with apparently the same rapidity as a cotton fabric; the wood absorbs moisture readily and shrinks and warps badly. This is due undoubtedly to the feeble lignification of the cell walls and to the lack of aseptic properties such as the timber of oak and pine possess. It was only when engineers, after protracted investigation and experiments, overcame these defects that the wood could be fabricated into valuable products. (Adapted from *Journal of the Washington Academy of Sciences, vol. 9, p. 157.*)

For previous introduction, see S. P. I. No. 47593.

53263 to 53266. GOSSYPIUM BARBADENSE L. Malvaceæ. **Cotton.**

From Gizeh, Egypt. Seeds presented by T. Trought, botanist, Ministry of Agriculture. Received May 4, 1921. Quoted notes by Mr. Trought.

53263. "*Ashmouni*, second grade, selected."

For previous introduction, see S. P .I. No. 7030.

53264. "*Doumains Assili.*"

53265. "*Doumains Sakel.*"

53266. "*Zagora.*"

53267 to 53377.

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received April 18, 1921. Notes from Vilmorin-Andrieux & Co.

53267 and 53268. CUCUMIS SATIVUS L. Cucurbitaceæ. **Cucumber.**

53267. "*Cornichon fin de Meaux.* An early, very productive gherkin from Meaux, with small cylindrical fruits in great demand for pickling."

53268. "*Cornichon vert petit de Paris.* A small green gherkin from Paris, a very productive vigorous variety extensively cultivated. The fruits are ready for pickling about eight days from the time of the setting of the flowers and can be harvested continuously from July to October."

53269 to 53272. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

53269. "*D'Espagne blanc* (white Spanish), a very hardy, productive bean."

53270. "*D'Espagne rouge.*" 53272. "*D'Espagne varié.*"

53271. "*D'Espagne bicolore.*"

53273 and 53274. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

53273. "*Du Cap marbré* (marble head). Seed spotted with red on a white ground."

53274. "*De Lima* (Lima). Short, very flat and large pods with large yellowish white seeds."

53275 to 53377. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53275. "*A rames extra-hâtif* (extra-early climber). An extremely early, very productive variety with long plump pods and white seeds."

53276. "*De Liancourt* (from Liancourt, Oise, France), with white, almost dull seeds. A hardy, vigorous, productive variety much esteemed for the dried seeds."

53277. "*Flageolet rouge à rames* (red climbing bean). An extremely productive variety with long, very delicate pods and excellent seeds."

53278. "*Nicard.* A white, flat-seeded variety suited to the South."

53279. "*Riz à rames* (climbing rice). A variety having a small white seed with very delicate skin which seems to melt in cooking."

53280. "*Rouge de Chartres* (red bean from Chartres). A variety extensively cultivated."

53281. "*Sabre à très grande cosse* (Sword variety with a very large pod). A vigorous variety yielding pods 25 to 30 centimeters long and most desirable because of its long season. The white seeds are excellent shelled fresh and the dry seed is also of excellent quality."

53282. "*De Sallandre amelioré* (improved Sallandre). A variety with very long pods well filled with fine large seeds. Highly esteemed for its productiveness."

53283. "*De Soissons blanc à rames, surchoix d'élite trié* (White Soissons Runner, choice selected variety). A variety with a very delicate flavor; one of the varieties most extensively cultivated for the dried seeds."

53284. "*De Soissons vert à rames* (Green Soissons Runner). A vigorous, productive variety with a strong stem reaching a height of about 3 meters and long pods containing ordinarily seven large, very green seeds of excellent quality."

53267 to 53377—Continued.

53285. "*D'Alger (beurre) noir à rames.*"
53286. "*Beurre blanc à rames.*"
53287. "*Beurre Couronne d'or.*"
53288. "*Beurre Roi des Mangetout à rames.*"
53289. "*Beurre du Mont-d'Or, à rames.*"
53290. "*Avant-gardé.*"
53291. "*Blanc geant sans parchemin.*"
53292. "*Blanc grand Mangetout.*"
53293. "*Mangetout du Maine.*"
53294. "*Mangetout de La Vallée.*"
53295. "*Mangetout de Saint-Fiacre.*"
53296. "*Mangetout de Saint-Fiacre blanc.*"
53297. "*Mangetout sans fil* (à rames)."
53298. "*Coco bicolore prolifique.*"
53299. "*Coco bicolore du Pape.*"
53300. "*Coco blanc.* H. gros Sophie."
53301. "*Coco rose à rames. H. de Prague marbre. H. boulot.*"
53302. "*Jaune d'or à rames.*"
53303. "*Phenomene à rames.*"
53304. "*Predome à rames.*"
53305. "*Princesse à rames. H. à la Reine.*"
53306. "*Quatre-à-quatre.*"
53307. "*Zebrè gris.*"
53308. "*De Bagnolet. H. petit gris. Suisse gris.*"
53309. "*Bagnolet vert.*"
53310. "*Bagnolet, à feuille d'Ortie.*"
53311. "*Barbes nain.*"
53312. "*Comtesse de Chambord. H. riz nain.*"
53313. "*Flageolet blanc extra.*"
53314. "*Flageolet blanc à longue cosse.*"
53315. "*Flageolet Chevrier, à grain toujours vert.*"
53316. "*Flageolet Merveille de France, à grain toujours vert.*"
53317. "*Flageolet Roi des verts.*"
53318. "*Flageolet nain Triomphe des chassis.*"
53319. "*Flageolet nain hâtif a feuille gaufrée. El à feuille d'Ortie.*"
53320. "*Flageolet très hâtif.*"
53321. "*Flageolet jaune ameliore H. prodige de Courtry. H. nain de Saint-Andre.* New variety."
53322. "*Flageolet noir.*"
53323. "*Flageolet rouge. H. dognon-de-coq.*"
53324. "*Flageolet beurre* (nain)."
53325. "*Flageolet rouge de Vitry.*"
53326. "*Empereur de Russie.*"
53327. "*Gloire de Lyon.*"
53328. "*Flageolet de Vitry blanc.*"
53329. "*Gros vert hâtif.*"

53267 to 53377—Continued.

53330. "*Incomparable. H. express.*"
53331. "*Incomparable à grain vert.*"
53332. "*Extra-précoce de Fontenay.*"
53333. "*L'Inepuisable.*"
53334. "*Du Perreux.*"
53335. "*Jaune cent-pour-un.*"
53336. "*Nain jaune extra-hâtif.*"
53337. "*Tres hâtif de Cholet.*"
53338. "*Noir de l'Hermitage.*"
53339. "*Prince noir.*"
53340. "*Nain Parisien. H. Souvenir de Deuîl.*"
53341. "*Merveille de Paris. H. petit gris.*"
53342. "*Noir hâtif de Belgique.*"
53343. "*Du Bouscat.*"
53344. "*Le Bleu.*"
53345. "*Rond blanc commun.*"
53346. "*Metis. H. Eclipse.*"
53347. "*Rouge d'Orléans.*"
53348. "*Nain de Lignereux (Nouv.).*"
53349. "*Sabre nain. H. très hâtif de Hollande.*"
53350. "*Shah de Perse.*"
53351. "*De Soissons nain. H. gros pied.*"
53352. "*St-Esprit. H. à la religieuse. H. à l'aigle.*"
53353. "*Suisse blanc. H. lingot.*"
53354. "*Suisse nain blanc hâtif.*"
53355. "*Suisse rouge (1^er^ choix).*"
53356. "*Très nain précoce (Nouv.).*"
53357. "*D'Alger (beurre) noir nain.*"
53358. "*Beurre noir nain à longue cosse.*"
53359. "*Beurre nain Gloire d'Ollainville.*"
53360. "*Beurre nain de tous les jours.*"
53361. "*Beurre nain Merveille du Marché.*"
53362. "*Beurre blanc nain.*"
53363. "*Beurre nain sans rival.*"
53364. "*Beurre doré nain.*"
53365. "*Beurre nain de Digoin.*"
53366. "*Beurre nain du Mont-d'Or.*"
53367. "*Coco marbre nain. H. de Prague marbre nain. H. boulot nain.*"
53368. "*Nain blanc hâtif sans parchemin.*"
53369. "*Nain blanc quarantain.*"
53370. "*Nain blanc Unique.*"
53371. "*Jaune de la Chine.*"
53372. "*Jaune du Canada.*"
53373. "*Nain Lyonnais à très longue cosse.*"
53374. "*Nain Lyonnais à grain blanc.*"

53267 to 53377—Continued.

53375. "*Nain Mangetout extra-hâtif.*"

53376. "*Prédome nain.*"

53377. "*Princesse nain à grosse cosse.*"

53378. Rubus sp. Rosaceæ.

From Honolulu, Hawaii. Plants presented by Willis T. Pope, horticulturist, Agricultural Experiment Station. Received April 27, 1921.

"A variety found growing on the slopes of Tantalus on this island (Oahu)." (*Pope.*)

53379. Rubus sp. Rosaceæ.

From Honolulu, Hawaii. Plants presented by Willis T. Pope, horticulturist, Agricultural Experiment Station. Received May 9, 1921.

"*Hitchcock berry.* Obtained from the locality of Glenwood on the island of Hawaii." (*Pope.*)

53380 to 53442.

From Bohemia, Czechoslovakia. Presented by Josef Mazanek. Received April 5, 1921.

53380. Malus pumila Mill. Malaceæ. **Paradise apple.**

"*Paradise.* A bushy apple growing usually about 5 feet in height. Native to the Caucasus, from which place it probably was introduced into western Europe, where it is now extensively used as a dwarfing stock for apples. This shrubby tree produces red apples of fair quality, is very drought resistant, and stands high summer temperatures. May be used in hybridization work and in creating a strain of bush apples." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 42638.

53381 to 53401. Malus sylvestris Mill. Malaceæ. (*Pyrus malus L.*) **Apple.**

53381. *Panenske ceske.*
53382. *Mazankovo malinove.*
53383. *Misen ceska.*
53384. *Reneta kminova.*
53385. *Strymka.*
53386. *Vejlimek.*
53387. *Zapovczene.*
53388. *Astrachan bily.*
53389. *Astrachan cerveny.*
53390. *Limburske.*
53391. *Malinove z Holovous.*
53392. *Charlamowski.*
53393. *Parmena zlata zimni.*
53394. *Tosonovicke.*
53395. *Reneta muskatova.*
53396. *Car Ales.*
53397. *Salove.*
53398. *Prazske pestre.*
53399. *Sirecek.*
53400. *Jablone.*
53401. *Doucin.*

53402 to 53414. Prunus domestica L. Amygdalaceæ. **Prune.**

53402. *Sliva domaci.*
53403. *Dolanka.*
53404. *Vlaska.*
53405. *Eslinska.*
53406. *Reineclaude zelena.*
53407. *Merunkova zluta.*
53408. *Merunkova cervena.*
53409. *Althanova.*
53410. *Spendlik.*
53411. *Mirabelka vancyska.*
53412. *Kirke.*
53413. *Mirabelka mala lutea.*
53414. *Svestky domaci.*

53380 to 53442—Continued.

53415. PRUNUS MAHALEB L. Amygdalaceæ. **Mahaleb cherry.**

Mahaleb cherry, for use as stock upon which to bud Japanese flowering cherries.

For previous introduction, see S. P. I. No. 18243.

53416 to 53426. PRUNUS spp. Amygdalaceæ. **Cherry.**

53416. PRUNUS sp. *Uherka cerna.*

53417. PRUNUS sp. *Msenska Janovka.*

53418. PRUNUS sp. *Lauremanova chrupka.*

53419. PRUNUS sp. *Obrovska z Hedelfingen.*

53420. PRUNUS sp. *Germerdorfska.*

53421. PRUNUS sp. *Mramorova.*

53422. PRUNUS sp. *Amarelka stinna.*

53423. PRUNUS sp. *Denisenova zluta.*

53424. PRUNUS sp. *Nejrannejsi.*

53425. PRUNUS sp. *Amarelka kralovska.*

53426. PRUNUS sp. *Oorovska vizen ze Sibenaku.*

53427. PRUNUS sp. Amygdalaceæ. **Plum.**

St. Julien.

53428 to 53441. PYRUS COMMUNIS L. Malaceæ. **Pear.**

53428. *Muskatelka letni.*

53429. *Prasilka.*

53430. *Dielova maslovka.*

53431. *Solanka.*

53432. *Avranska ceska.*

53433. *Pastornice.*

53434. *Boskova lahvice.*

53435. *Koperecka.*

53436. *Krivice.*

53437. *Malovanka.*

53438. *Jakubka ceska.*

53439. *Vejcita letno.*

53440. *Dzbernice.*

53441. *Hrusne.*

53442. PRUNUS sp. Amygdalaceæ. **Cherry.**

Tresne.

53443 and 53444. DIOSCOREA spp. Dioscoreaceæ.

From Antigua, British West Indies. Tubers presented by F. G. Harcourt, agricultural superintendent. Received May 9, 1921. Quoted notes by Mr. Harcourt.

53443. DIOSCOREA ESCULENTA (Lour.) Burkill. **Lesser yam.**

"*Spratt*, or *Antigua cush-cush.* A light-brown, thin-skinned, white-fleshed yam, producing numerous small tubers. When cooked, the flesh is floury, fine grained, and of excellent quality, the flavor somewhat resembling that of the English potato."

53444. DIOSCOREA TRIFIDA L. f. **Yampi.**

"*The Trinidad yampi*, or *cush-cush.* A dark-brown, thin-skinned yam of excellent quality, producing rather small globose tubers. When cooked, the flesh is fine grained, possesses a glistening appearance, and has also a rich but delicate flavor. (There appear to be three variations of color—white, pink, and purple fleshed.)"

53445. SOLANUM MAGLIA Schlecht. Solanaceæ.

From Lima, Peru. Tubers presented by the director, Ministerio de Fomento, Estación Central Agronómica. Received June 27, 1921.

A nearly glabrous wild potato, native to Chile, with angled, winged stems about 2 feet high; compound, light-green leaves 4 to 8 inches long; compound cymes of white flowers 1 inch wide; and subglobose or oblong tubers

up to 1½ inches long, with smooth, reddish brown surfaces. When boiled the tubers shrink and become watery and insipid. (Adapted from *Curtis's Botanical Magazine, pl. 6756.*)

For previous introduction, see S. P. I. No. 44185.

53446 to 53450.

From Wellington, New Zealand. Seeds presented by A. H. Cockayne. Received May 10, 1921. Quoted notes by Mr. Cockayne.

Introduced for experiments by Department specialists.

53446. LOTUS ULIGINOSUS Schkuhr. Fabaceæ.

Received as *Lotus major*, which is a form of *L. corniculatus*, but the sample does not agree with seeds of that species.

For previous introduction, see S. P. I. No. 48635.

53447. LOTUS sp. Fabaceæ.

Received as *Lotus hispidus*, but the sample does not agree with seeds of that species.

53448. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

"*Lucerne Marlboro.*"

53449 and 53450. TRIFOLIUM REPENS L. Fabaceæ. **White clover.**

53449. "*Hawkes Bay.*" 53450. "*Canterbury.*"

53451. CUCUMIS SATIVUS L. Cucurbitaceæ. **Cucumber.**

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received April 18, 1921.

"*Cornichon de Toulouse* (gherkin from Toulouse)." (*Vilmorin-Andrieux & Co.*)

53452 and 53453.

From Allahabad, United Provinces, India. Seeds presented by William Bembower. Received April 14, 1921. Quoted notes by Mr. Bembower.

53452. ILEX sp. Aquifoliaceæ.

"Seeds of a black fruit that grew on a bush with hollylike leaves, collected in the hills of the Dehra Dun District, United Provinces, India."

53453. MYRICA RUBRA Sieb. and Zucc. Myricaceæ.

"*Kaiphal*, from the Dehra Dun District, United Provinces, India."

53454 to 53462. COFFEA spp. Rubiaceæ. **Coffee.**

From Tananarive, Madagascar. Seeds presented by J. G. Cairn, American consul. Received May 14, 1921. Quoted notes by Mr. Cairn.

"Varieties of Coffea cultivated on the east coast of Madagascar."

53454 and 53455. COFFEA CANEPHORA Pierre.

53454. This coffee thrives from sea level to an altitude of 1,000 meters and succeeds best at a height of 450 to 700 meters in a damp climate with abundant rain, the annual precipitation being 2,500 to 3,500 millimeters with a minimum of 2,000 millimeters and no long dry periods. Under favorable conditions a drought of two to three months' duration will do no harm, but if the drought extends beyond this the year's crop is seriously injured, though the trees do not appear to suffer permanently. The trees come into bearing at the age of 3 years and yield 875 to 1,300 kilograms per hectare under moderately favorable conditions and 1,700 to 2,300 kilograms on virgin soil and under favorable conditions. (Adapted from *Philippine Agricultural Review, vol. 9, p. 123.*)

53455. Variety "*Robusta.*" Apparently a robust form of *C. canephora.*

ACC 5-4959

53454 to 53462—Continued.

53456. COFFEA CONGENSIS Froehn.

A tree with fuscous gray slender branches and glabrous subcoriaceous leaves, narrowly oval or elliptic; the fruits are oval. (Adapted from *Notizblatt des Königliches Botanischen Gartens und Museums zu Berlin, vol. 1, p. 235.*)

53457. COFFEA DEWEVREI Wildem. and Dur.

This species requires no shade and some plants yield 16 kilograms of berries in four months. From plants 34 to 38 months old, 8.3 kilograms of fresh berries make 1 kilogram of coffee. (Adapted from *Bulletin Agricole du Congo Belge, vol. 7, p. 293.*)

For previous introduction, see S. P. I. No. 50631.

53458. COFFEA EXCELSA Cheval.

A coffee which thrives from sea level to 700 meters, succeeds well on rather stiff clayey soils, and is quite drought resistant; it might be grown with an annual rainfall of 1,200 millimeters. It is the most resistant to drought and blight of any coffee, is of strong vigorous growth, and produces 1 kilogram of coffee from 7 to 8 kilograms of berries. *Excelsa* makes an excellent stock for other coffees. The first crop is obtained at the age of 4 to 5 years and a full crop at the age of 7 to 8 years. (Adapted from *Philippine Agricultural Review, vol. 9, p. 121.*)

For previous introduction, see S. P. I. No. 50632.

53459. COFFEA CANEPHORA KOUILOUENSIS Pierre.

A variety which yields 1 kilogram of coffee from 3.8 kilograms of berries. The small leaves make very dense shade and prevent the circulation of air, two causes which contribute to the development of the coffee blight, *Hemileia vastatrix.* (Adapted from *Bulletin Agricole du Congo Belge, vol. 7, p. 296.*)

53460. COFFEA LIBERICA Bull.

Among the Liberica types, *Coffea liberica* is the only one that has attained commercial importance. When first imported to Java this coffee was resistant to the blight and it was extensively planted; during recent years, however, a strain of the Hemileia has developed which so severely injures the Liberica that its cultivation has practically been abandoned. The yield averages 600 to 700 kilograms of coffee per hectare.

To produce 1 kilogram of marketable coffee, 10 kilograms of berries are required. The Liberica coffee has a large, hard berry which requires a special pulper. The Liberica coffee and all other closely allied varieties or species prefer low altitudes, from sea level to an altitude of 350 meters. All the coffees of this type succeed well even on rather stiff clayey soils and are quite drought resistant. (Adapted from *Philippine Agricultural Review, vol. 9, p. 121.*)

For previous introduction, see S. P. I. No. 51482.

53461 and 53462. COFFEA LAURENTII Wildem.
(*C. robusta* Hort.)

This variety was discovered in 1898 in the Kongo by Emile Laurent. One of the chief features of this new variety seems to be its immunity against disease. The plant grows very rapidly, and after eight months shows its first flowers. A small harvest is obtained in the second year, and the maximum production is reached in the fourth or fifth year. Clusters are numerous and contain 50 to 60 berries, which require 10 months to ripen. To make 1 kilogram of marketable coffee, 9 kilograms of the red berries are required.

The following are the yields per hectare of two plantations of *C. robusta* in Java, one of exhausted and one of virgin soil: Exhausted soil, second year, very little; third year, 485 kilograms; fourth year, 696 kilograms; fifth year, 1,066 kilograms. Virgin soil, second year, little; third year, 556 kilograms; fourth year, 1,657 kilograms. Trees properly

53454 to 53462—Continued.

cultivated have not shown the slightest falling off in yield at 12 years of age. (Adapted from *Daily Consular and Trade Reports, November 3, 1913.*)

53461. "*Robusta du Congo.*" 53462. "*Robusta du Java.*"

53463 and 53464. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From La Paz, Bolivia. Tubers presented by W. Duval Brown, American consul. Received May 3, 1921. Quoted notes by Mr. Brown.

53463. "*Purple-marked variety.* Grown in Bolivia at a high altitude and supposed to be very resistant to frost."

53464. "*White variety.* Grown in Bolivia at a high altitude and supposed to be very resistant to frost."

53465 to 53467.

From Avondale, Auckland, New Zealand. Seeds presented by H. R. Wright. Received May 14, 1921. Quoted notes by Mr. Wright.

53465. ALOPECURUS PRATENSIS L. Poaceæ. Foxtail grass.

"New Zealand-grown grass from clayey hill country."

For previous introduction, see S. P. I. No. 34282.

53466 and 53467. PHLEUM PRATENSE L. Poaceæ. Timothy.

53466. "New Zealand-grown timothy from drained peat swamp."

53467. "New Zealand-grown timothy from light pumice soil."

53468 and 53469. COTONEASTER spp. Malaceæ.

From Calcutta, Bengal, India. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received May 9, 1921.

53468. COTONEASTER AFFINIS Lindl.

"Collected at an altitude of 7,000 feet in the Himalayas near Darjiling, India, March 4, 1921." (*Rock.*)

A large deciduous Himalayan shrub or small tree with leaves pubescent beneath and compound, spreading, many-flowered cymes. The numerous slender-stalked, brown, roundish fruits are in large spreading bunches. The white strong elastic wood is used for walking sticks in the northwest Himalayas. The shrub is hardy in England (Adapted from *Brandis, Forest Flora of India, p. 208.*)

For previous introduction, see S. P. I. No. 40173.

53469. COTONEASTER SIMONSI Baker.

"Collected at an altitude of 7,000 feet in the Himalayas near Darjiling, India, March 4, 1921." (*Rock.*)

For previous introduction, see S. P. I. No. 51493.

53470 and 53471.

From Calcutta, India. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received May 9, 1921. Quoted notes by Mr. Rock.

53470. TERMINALIA MYRIOCARPA Heurck and Muell. Arg. Combretaceæ.

"A tall, important, and very valuable timber tree of northeast Assam, where it is a protected tree in the Dibrugarh forests. It reaches a height of 80 to 100 feet, is deciduous, and fruits in January and February when the tree is bare. The tree grows in the more open forest land at an altitude of about 500 feet. Seeds collected from a tree found between Rangagora and Berjan forests February 21, 1921."

For previous introduction, see S. P. I. No. 47855.

53470 and 53471—Continued.

53471. TRACHYCARPUS MARTIANUS (Wall.) Wendl. Phœnicaceæ. Palm.

"A small-leaved fan palm from the Himalayas. These seeds came from specimens 40 feet in height, growing at an altitude of 7,200 feet near Darjiling. Collected March 3, 1921."

For previous introduction, see S. P. I. No. 50373.

53472 and 53473. HYDNOCARPUS spp. Flacourtiaceæ.

From Calcutta, Bengal, India. Seeds presented by Lieut. Col. A. T. Gage, director, Botanical Survey of India. Received May 27, 1921.

"From Tavoy, Burma, not previously represented in the museum collection. The seeds of both of these have a partially muricated testa which resembles that of *Hydnocarpus anthelminthica*." (*C. C. Calder.*)

53472. HYDNOCARPUS sp. Museum No. 37357.

53473. HYDNOCARPUS sp. Museum No. 37479.

53474. KHAYA NYASICA Stapf. Meliaceæ. African mahogany.

From Mount Silinda, Southern Rhodesia. Seeds presented by Dr. W. L. Thompson. Received May 27, 1921.

"One of our largest and most valuable timber trees." (*Thompson.*)

"A huge tree attaining a height of 150 feet or more and sometimes a diameter of 15 feet, one that I measured in the Inyamkuwha forest patch having attained this diameter at 8 feet from the ground just above the buttresses. Diameters of 5 to 8 feet are not uncommon. The trunk is almost invariably very straight and runs up to a considerable height before branching; the young saplings have much the appearance of young *Castilla elastica*. The bark is light gray, thick, smooth, or laminated, astringent in taste, and reminds one of quinine, hence the native name *umbaba* (to be bitter). The hard red timber has a handsome grain, easily worked, and weathers well above ground; it is untouched by Bostrychidæ or termites. The tree makes an enormous crown of handsome glossy foliage. The old trees are in full bloom at the commencement of November, and the fruits commence to ripen at the end of the following September, continuing to fall till December and littering the ground for some distance in every direction." (*E. G. Baker, Journal of the Linnean Society, vol. 40, p. 42.*)

53475. DIOSCOREA ALATA L. Dioscoreaceæ. Greater yam.

From Sebring, Fla. Tubers presented by J. B. Brown. Received June 1, 1921.

"The 63-pound yam was grown in one season; this particular one was planted near where the waste water was thrown and it got a fairly large quantity of water. I generally let them grow as long as they will. When we have no frost to kill the vines they will grow until March or April, and I then plant them a few weeks after they are dug, so that the growing season of the yam in question was about 11 months. Of course we have a dry season, and unless they are watered they do not thrive so well." (*Brown.*)

"A white-fleshed yam of very good quality from Panama. The underground tubers when of large size are irregular in shape. The vine produces tubers in the axiis of the leaves, which are used for propagation." (*R. A. Young.*)

53476 and 53477. ERAGROSTIS ABYSSINICA (Jacq.) Schrad. Poaceæ. Teff.

From Paris, France. Seeds presented by Vilmorin-Andrieux & Co. Received June 1, 1921. Quoted notes by Vilmorin-Andrieux & Co.

A wonderful hay crop of the high veldt in the Transvaal and cultivated as a food grain in Abyssinia.

53476. "Seed of the reddish or brownish type."

53477. "White seed mixed with about 15 per cent of reddish type."

For previous introduction, see S. P. I. No. 48815.

53478 to 53482.

From Mauna Kea, Hawai'i. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 1, 1921. Quoted notes by Mr. Rock.

53478 and 53479. STYPHELIA GRAYANA Rock. Epacridaceæ.

"An exceedingly handsome shrub closely allied to the heath family. It is loaded nearly all the year with white, pink, or red berries, making an exceptionally showy appearance. The shrub grows at altitudes of 10,000 to 11,000 feet on the slopes of Mauna Kea, Mauna Loa, and Haleakala, Hawaiian Islands. Worthy of cultivation as an ornamental garden plant. Collected on Mauna Kea, Hawaii, at an altitude of 10,000 feet, in May, 1921."

53480 to 53482. RUBUS MACRAEI A. Gray. Rosaceæ. **Akala.**

"The Hawaiian giant raspberry, occurring at an altitude of about 6,000 feet. It is a straight bush with the older branches thornless. The fruits, borne at the drooping tips of the branches, are very numerous, over 2 inches in diameter, and exceedingly juicy; the seeds are comparatively small. The flesh is slightly bittter, but otherwise delicious. This berry is of great promise, as it grows in a region where frost is not uncommon in the winter months. It would grow well in the Sequoia regions of the Pacific coast. Collected in May, 1921, on Mauna Kea, Hawaii."

53480. "Red variety, from Mauna Kea, Keanakolu."

53481. "Selected red variety from Mauna Kea, Hawaii."

53482. "Yellow, selected variety, from Mauna Kea, Hawaii. The variety with orange-yellow fruits is spiny, but the fruits are even larger than those of the red variety and sweet instead of bitter."

53483. FAGRAEA AURICULATA Jack. Loganiaceæ.

From Singapore, Straits Settlements. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 1, 1921.

"A medium-sized tree with drooping branches and large, handsome, fleshy leaves. The snow-white, bell-shaped flowers measure 6 to 7 inches across and 5 to 6 inches long. It is exceedingly handsome and certainly worthy of cultivation; it is, however, distinctly tropical, being native to the Malay Peninsula. Collected at Singapore in March, 1921." (*Rock.*)

53484. STERCULIA MACROPHYLLA Vent. Sterculiaceæ.

From Calcutta, India. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 1, 1921.

"A large tree with cordate suborbicular entire leaves which measure 10 to 12 inches long. It is native to the Malay Peninsula, but occurs also in Java." (*Rock.*)

For previous introduction, see S. P. I. No. 34366.

53485. OSTEOMELES OBTUSIFOLIA (Pers.) Kunth. Malaceæ.

From Loja, Ecuador. Seeds collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received June 8, 1921.

"(No. 609a. May 7, 1921. Loja, Ecuador.) *Quiqui*, collected near the town of Loja, in southern Ecuador. It is common in this region, along the edges of ravines and among scrub at altitudes of 7,000 to 8,000 feet. The plant is an arborescent shrub reaching to 12 or 15 feet. It is armed with long sharp thorns and has oblong-elliptic, blunt or acute, dentate leaves about an inch long. The thin-skinned fruits, which are produced in small terminal clusters, are round to oblate, deep red, and up to half an inch in diameter. A small quantity of yellowish, mealy flesh surrounds several hard seeds. The

flavor of the fruit is subacid and slightly acrid, resembling that of some of the northern haws (Crataegus).

"This plant has been used at Loja as a stock on which to graft the apple, according to Dr. Ramon Eguiguren. It is introduced for trial as a stock plant in the United States." (*Popenoe.*)

53486. DIGITARIA EXILIS (Kippist) Stapf. Poaceæ. **Fundi.**

From Kaduna, Nigeria, Africa. Seeds purchased from P. H. Lamb, Director of Agriculture, northern Provinces. Received March 28, 1921.

"This grass in a single season's testing has proved remarkably promising as forage for our Southern States. In the northern Provinces of Nigeria it seems to be known under the name of *acha*." (*C. V. Piper.*)

53487. ACROCOMIA SCLEROCARPA Mart. Phœnicaceæ.
Macauba palm.

From Horqueta, Paraguay. Seeds procured by Thomas R. Gwynn. Received May 4, 1921.

"*Mbocaya* (coco). The *coco*, from the roots up, is a most valuable plant. When very young the roots can be used as mandioca. When matured, the stem, from a foot or two above the roots toward the bud of the plant, makes excellent starch, which is just as good as that furnished by the mandioca plant; moreover, this part of the plant yields nourishing feed, without any preparation, for all kinds of livestock and fowls. The leaves make thread and twine from which the Indians make hammocks that for endurance are par excellence. The *coco* has a long, straight body, sometimes 80 feet in height, and from its top sends out its long, feathery, waving leaves. The fruits are formed at the base of the leaves like huge bunches of grapes From two to four bunches are produced every year by a single tree. The oil from the kernel is better than any olive oil to be found in this country, and the soap made from it is equal to any toilet soap in use. The one drawback to this palm is the thorns on the stems of the leaves and on the trunk. Sometimes, however, the trunk is entirely free from thorns, especially when very tall and in its full vigor. The leaves also furnish feed for stock; in times of drought when pasture fails the natives fell the trees for their horses and cattle and split open the trunks so that the cattle may eat the pith." (*Gwynn.*)

For previous introduction, see S. P. I. No. 51742.

53488. VACCINIUM MEYENIANUM Klotzsch. Vacciniaceæ.

From Hawaii. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 11, 1921.

"Collected on Isoorora Hill, Northwestern District, British Guiana, in May, shrub 15 feet in height, native to the mountains of Hawaii, related to the ohelo berry (*Vaccinium reticulatum* Smith), and loaded with bright, cherrylike berries which are brilliant red for several months in the year. It grows at an altitude of about 4,000 to 5,000 feet and is especially abundant about the region of the Volcano Kilauea. The berry is less well known than the ohelo berry. Owing to the bright-red color of the berries they have been avoided for fear of their being poisonous. They are much juicier than the ohelo berries, but are often slightly bitter. Some, however, are sweet and delicious. The plant is peculiar to the Hawaiian Islands." (*Rock.*)

53489. CLUSIA sp. Clusiaceæ.

From Georgetown, Demerara, British Guiana. Seeds presented by R. Ward, superintendent, Botanic Gardens. Received June 9, 1921.

"Collected on Isoorora Hill, Northwestern District, British Guiana, in May, 1921." (*Ward.*)

The Clusias are opposite-leaved trees or shrubs, usually with roseate flowers, native to tropical America. They may be of value as ornamentals.

53490. OCHROMA LAGOPUS Swartz. Bombacaceæ. **Balsa.**

From Camaguey, Cuba. Seeds presented by Dr. R. L. Luaces, director, Granja Escuela. Received June 1, 1921.

"This tree grows rapidly, requiring only three years from seed to flower at this place, and makes a pretty shade tree. I believe that it will grow well in California and around Miami and Key West." (*Luaces.*)

For previous introduction see S. P. I. No. 53262.

53491 and 53492.

From Soledad, Cienfuegos, Cuba. Seeds presented by R. M. Grey, superintendent, Cuban Gardens. Received June 4, 1921.

53491. CASIMIROA EDULIS La Llave. Rutaceæ. **White sapote.**

A large tree with palmately compound leaves and small greenish yellow flowers. The delicious greenish yellow fruit, about the size of an orange, usually contains five large seeds. This fruit makes an excellent ice cream resembling that made from peaches. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 680.*)

For previous introduction, see S. P. I. No. 46661.

53492. GOSSYPIUM sp. Malvaceæ. **Cotton.**

"Brown cotton." (*Grey.*)

53493. GOSSYPIUM BARBADENSE L. Malvaceæ. **Cotton.**

From Alexandria, Egypt. Seeds presented by A. N. Anagnosti, agent for E. A. Shaw & Co., New York City. Received May 16, 1921.

Suprema cotton.

53494. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Baguio, Benguet, Philippine Islands. Tubers presented by J. A. Wright, superintendent, Trinidad Agricultural School, through P. J. Wester, agricultural adviser, Bureau of Agriculture, Manila. Received June 14, 1921.

"These potatoes were grown near the mountain capital, one of the few places in the Philippines where potatoes are grown successfully." (*Wester.*)

53495. DIOSCOREA TRIFIDA L. f. Dioscoreaceæ. **Yampi.**

From Kingston, Jamaica. Tubers presented by W. S. Goodman, acting superintendent, Hope Gardens. Received June 21, 1921.

"*Jamaica yampi.* A white-fleshed medium-sized yam of excellent quality, said to be the most popular variety in Jamaica." (*R. A. Young.*)

53496. CASIMIROA sp. Rutaceæ. **White sapote.**

From Orange, Calif. Budwood presented by C. P. Taft. Received June 21, 1921.

"Seedless sapote." (*Taft.*)

53497 to 53499. COCOS NUCIFERA L. Phœnicaceæ. **Coconut.**

From Port Dickson, Negri Sembilan, Federated Malay States. Presented by Will P. Handover. Received June 11, 1921. Quoted notes by Mr. Handover.

53497. "*Green (Nyiur Puyah).*"

53498. "*Red (Nyiur Rajah).*"

53499. "*Yellow (Nyiour Gading).*"

53500 to 53527. PHASEOLUS spp. Fabaceæ. Bean.

From Reading, England. Seeds purchased from Sutton & Sons. Received April 4, 1921.

Introduced for experiments in breeding disease-resistant strains.

53500 to 53511. PHASEOLUS COCCINEUS L. Scarlet Runner bean.

53500. *Champion Scarlet.*
53501. *Chelsea Giant White.*
53502. *Ne Plus Ultra.*
53503. *Scarlet.*
53504. *Sutton's A–1.*
53505. *Sutton's Best of All.*
53506. *Sutton's Mammoth White.*
53507. *Sutton's Painted Lady.*
53508. *Sutton's Prize Winner.*
53509. *Sutton's Scarlet.*
53510. *Veitch's Hackwood Park.*
53511. *Veitch's Mammoth Scarlet.*

53512 to 53527. PHASEOLUS VULGARIS L. Common bean.

53512. *Canadian Wonder.*
53513. *Long-Podded Negro.*
53514. *Sutton's Canadian Wonder.*
53515. *Sutton's Everbearing.*
53516. *Sutton's Evergreen.*
53517. *Sutton's Forcing.*
53518. *Sutton's Green Gem.*
53519. *Sutton's Magnum Bonum.*
53520. *Sutton's Monster Negro.*
53521. *Sutton's Perfection.*
53522. *Sutton's Plentiful.*
53523. *Sutton's Prolific Negro.*
53524. *Sutton's Reliance.*
53525. *Sutton's Satisfaction.*
53526. *Sutton's Superlative.*
53527. *Sutton's White Haricot.*

53528 to 53531. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Saint Croix, Virgin Islands. Cuttings presented by Dr. Longfield Smith, agronomist in charge, Agricultural Experiment Station. Received May 9, 1921.

53528. *S. C. 12/4.*

A cane which has shown the most promise in a test of 120 varieties (imported and Saint Croix seedlings which had given promise in previous trials). It has given a larger yield in weight than other good canes previously grown. The canes yield quite as much juice as the standard cane, *Ribbon*, and the juice is generally distinctly richer in sucrose. The canes are fairly stout, an average specimen having a circumference of 5 to 6 inches. The internodes are 5 to 7 inches long. An exceptionally good specimen in a rotation field had 33 joints and gave the following measurements: Weight of cane, 21 pounds; length, 12 feet; circumference, 6.25 inches. (Adapted from *Louisiana Planter and Sugar Manufacturer, vol. 66, p. 308.*)

53529. *S. C. 12/37.*

A cane which gives good results as a plant and also as a ratoon. It yielded 5.9 tons per acre, showing an increase of 2.1 tons per acre over the *Ribbon* control plats. The ratoons gave 22.1 tons per acre. (Adapted from *Report of the Agricultural Experiment Station in St. Croix, 1914–15, p. 18.*)

53530. *S. C. 13/13.*

This cane gave 6.2 tons per acre, showing an increase of 2.9 tons over *Ribbon* cane. The ratoons gave 13.2 tons per acre. (Adapted from the *Report of the Agricultural Experiment Station in St. Croix, 1914–15, p. 20.*)

53531. [No label.]

53532. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

From Dos Cabezos, Ariz. Seeds presented by E. J. Hands. Received May 9, 1921.

"Beans that I got on a recent trip into Chihuahua, Mexico. The natives who live in the foothills grow these beans without irrigation and, in fact, grow no other beans. These may develop into something better than the common 'frijol.'" (*Hands.*)

53533. DOLICHOS LABLAB L. Fabaceæ. **Bonavist bean.**

From Yeungkong, Kwangtung, China. Seeds presented by Mrs. W. H. Dobson, Forman Memorial Hospital. Received May 9, 1921.

"The beans are said to be of long life, growing at all seasons in South China." (*Mrs. Dobson.*)

For previous introduction, see S. P. I. No. 50760.

53534. BROSIMUM ALICASTRUM Swartz. Moraceæ. **Breadnut tree.**

From Saint Jean le Blanc, Loiret, France. Seeds presented by E. Versin. Received May 12, 1921.

"The leaves are used extensively for forage purposes in Yucatan. The seeds are produced in great abundance and might be utilized as a source of industrial starch or perhaps distilled into alcohol." (*O. F. Cook.*)

For previous introduction, see S. P. I. No. 47996.

53535 to 53540. RUBUS spp. Rosaceæ. **Bramble.**

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Garden. Received May 14, 1921.

53535. RUBUS BIFLORUS QUINQUEFLORUS Focke.

This very ornamental variety, native to western Szechwan at altitudes of 5,800 to 6,800 feet, produces its clustered orange-yellow berries over so long a period as to be almost perpetual fruiting. Because of its wax-coated stems it is one of the most striking plants in the garden in autumn and winter. (Adapted from *Gardeners' Chronicle, vol. 46, p. 212.*)

For previous introduction, see S. P. I. No. 50294.

53536. RUBUS CHROOSEPALUS Focke.

A Chinese bramble with glabrous cordate leaves, white tomentose beneath, and small purplish flowers followed by black fruits. Native to Hupeh Province. (Adapted from *Focke, Species Ruborum, p. 1, p. 52.*)

For previous introduction, see S. P. I. No. 52942.

53537. RUBUS OMEIENSIS Rolfe.

A large, unarmed, straggling shrub with maplelike leaves, downy beneath, deeply divided stipules one-half to three-quarters of an inch long, and terminal, many-flowered panicles. The purple flowers, half an inch across, are followed by black, well-flavored fruits ripening late. Native to western China and found on Mount Omei. It grows up to 6,000 feet altitude and will probably be perfectly hardy. It makes growths 10 to 12 feet long in a season. (Adapted from *Bean, Trees, and Shrubs Hardy in the British Isles, vol. 2, p. 465.*)

For previous introduction, see S. P. I. No. 40195.

53538. RUBUS THIBETANUS Franch.

An attractive, deciduous, Chinese shrub with purplish stems and dark lustrous green leaves, white felted below. The purple flowers, half an inch across, are followed by black roundish fruits of the same diameter, covered with a bluish bloom. (Adapted from *Focke, Species Ruborum, pt. 1, p. 179.*)

For previous introduction, see S. P. I. No. 42592.

53535 to 53540—Continued.

53539. RUBUS VEITCHII Rolfe.

An ornamental Chinese plant with pinnate leaves 3 inches long, silvery glaucous above and whitish beneath. The double pink flowers are not very freely produced. (Adapted from *The Garden, vol. 79, p. 518.*)

53540. RUBUS XANTHOCARPUS Bur. and Franch.

A perennial Chinese climber, 1 to 4 feet long, sparsely prickly or unarmed, which dies to the ground every year. The edible fruit is composed of many golden yellow drupes. It is cultivated for the fruit in Lithuania. Native to central and northwestern China. (Adapted from *Focke, Species Ruborum, pt. 1, p. 129.*)

For previous introduction, see S. P. I. No. 1004.

53541. TRIFOLIUM GLOMERATUM L. Fabaceæ. **Cluster clover.**

From Melbourne, Victoria. Seeds presented by Messrs. Law, Somner, & Co. Received May 14, 1921.

Introduced for experiments by department specialists.

For previous introduction, see S. P. I. No. 53007.

53542. BRASSICA RUGOSA (Roxb.) Prain. Brassicaceæ. **Palangi.**

From Calcutta, India. Seeds presented by Lieut. Col. A. T. Gage, director, Botanical Survey of India. Received May 16, 1921.

An early cold-weather crop in the hills of the central, eastern, and western Himalayas. The permanent radical leaves form a loose cabbagelike head 1 foot in diameter. Later a stoutish stem, 4 to 6 feet high, is formed, its branches ascending to make a narrow pyramidal head 6 to 10 inches across. The succulent leaves, 12 to 15 inches long and 8 to 9 inches wide taper into thick white fleshy stalks 3 to 4 inches long and over an inch wide. The plant is cultivated in Nepal, where its leaves are plucked almost as fast as they are developed and used as a vegetable. An oil is extracted from the seeds. (Adapted from *The Agricultural Ledger, vol. 5, p. 11.*)

For previous introduction, see S. P. I. No. 46479.

53543 and 53544.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received May 18, 1921.

53543. HYOSCYAMUS MUTICUS L. Solanaceæ.

"A medicinal plant rich in hyoscyamine, from the Sudan." (*Trabut.*)

A thick-stemmed perennial with fleshy ovate leaves 4 inches long and violet-spotted whitish flowers nearly an inch in length. Like the henbane (*H. niger*) this plant, which is native to Egypt and western Asia, is likewise rich in hyoscyamine and is used medicinally. (Adapted from *Muschler, Manual Flora of Egypt, vol. 2, p. 853.*)

53544. TRITICUM DURUM Desf. Poaceæ. **Durum wheat.**

"*Pelissier de Facé.* Hard wheat from the Medea region, 1920." (*Trabut.*)

53545. RUBUS sp. Rosaceæ. **Blackberry.**

From Ecuador. Seeds presented by George K. Cherrie, Newfane, Vt. Received May 23, 1921.

"A blackberry that I found growing in great abundance at a point known as Sabanilla on the River Zamora. The locality is at an altitude of about 5,500 feet, in the Ecuadorian 'Oriente.' The seeds were collected November 10, 1920, which must have been the height of the fruiting season. I do not believe I have ever seen such tremendous clusters of berries. On some of the bushes blossoms as well as ripe fruit were to be seen. The berries are large and to me were very fine flavored." (*Cherrie.*)

53546. DIGITARIA EXILIS (Kippist) Stapf. Poaceæ. **Fundi.**

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Gardens. Received May 24, 1921.

"*Atcha* from Aburi; used by the natives as a delicacy in food, being cultivated for that purpose. The seeds are ground and made into a sauce." (*Prain.*)

For previous introductions, see S. P. I. No. 52736.

53547. ALEURITES MOLUCCANA (L.) Willd. Euphorbiaceæ. **Lumbang.**

From Los Angeles, Calif. Seeds presented by Russell C. Westcott. Received May 24, 1921.

"*Candlenut.* The tree, purchased in Santa Barbara, is about 20 years old and is now growing on the lawn. It is about 40 feet high and has formed a round head. The tree has never been injured by frost except in the freeze of 1912 when it was killed back to the main branches, but quickly recovered.

"These candlenuts are edible but are slightly laxative. The tree bore over a bushel of nuts last year, which is the largest crop it has ever had. It produces about two crops annually, although there are blossoms and nuts on it most of the time." (*Westcott.*)

For previous introduction, see S. P. I. No. 52755.

53548. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*T. vulgare* Vill.)

From Rieti, Italy. Seeds presented by N. Strampelli, director, R. Statione Sperimentale di Granicoltura. Received May 25, 1921.

"*Carlotta Strampelli.* A wheat which thrives in any soil in any position; it produces best, however, in fresh, deep, fertile, moderately worked soil. The seeds should be sown early, preferably in rows." (*Strampelli.*)

53549 to 53554.

From Hamburg, Germany. Seeds presented by Ernst & Von Spreckelsen. Received May 28, 1921.

The following types were introduced for experimental work:

53549. LUPINUS ANGUSTIFOLIUS L. Fabaceæ. **Blue lupine.**

53550. LUPINUS LUTEUS L. Fabaceæ. **Yellow lupine.**

53551. ORNITHOPUS SATIVUS Brot. Fabaceæ. **Serradella.**

53552 to 53554. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

53552. Strain 1.

53553. Strain 2.

53554. Strain 3.

53555. DIOSPYROS DISCOLOR Willd. Diospyraceæ. **Mabolo.**

From Manila, Philippine Islands. Budded seedlings presented by Sr. Adn. Hernandez, Director of Agriculture, Department of Agriculture and Natural Resources, through P. J. Wester, horticulturist in charge, Lamao Experiment Station. Received June 25, 1921.

"Small budded seedless *mabolos*, variety *Manila*, from the original tree in Manila. Among the less well-known tropical fruits that are commonly propagated from seed, the *mabolo* is the first species to permanently contribute to tropical pomology a seedless fruit of greatly improved quality. During the past dry season experiments were made at Lamao that yielded very satisfactory results, and it was found that the *mabolo* is readily shield-budded. The ordinary *mabolo*, a medium-sized Philippine tree of vigorous growth and a desirable ornamental, with shining leaves 5 to 10 inches long, pubescent beneath, bears velvety, dull reddish, thin-skinned fruits 3 inches long and 3½ inches in

diameter, with whitish, firm, rather dry, sweet flesh of rather indefinite flavor, and four to eight large seeds.

"Notwithstanding its size and attractive appearance it has never gained the favor of the European, although very popular with the natives. This seedless variety is oblate, sweet, and juicy, and of good flavor, absolutely coreless, and without seed. Like the banana, the entire fruit is edible, the thin skin excepted, and it is a very superior fruit. According to the owner of the trees, 80 per cent of the fruit is seedless; the remainder contains from one to three seeds." (*Wester.*)

53556. Ferraria welwitschii Baker. Iridaceæ.

From Bela Vista, Angola. Bulbs presented by H. A. Neipp. American Mission. Received June 28, 1921.

"A number of bulbs, which may be of some interest should they blossom in America." (*Neipp.*)

53557. Bromus unioloides (Willd.) H. B. K. Poaceæ. Brome-grass.

From Vlakfontein, Colesberg, South Africa. Seeds presented by Col. A. J. Bester. Received May 25, 1921.

"*Rescue grass.* A grass which grows in the most exposed parts during the winter." (*Bester.*)

For previous introduction, see S. P. I. No. 34806.

53558 to 53562. Holcus sorghum L. Poaceæ. Sorghum.

(*Sorghum vulgare* Pers.)

From Bombay, India. Seeds presented by Grindlay & Co., through the Director of Agriculture, Bombay Department of Agriculture. Received May 28, 1921.

For experimental work of the Office of Forage-Crop Investigations.

53558. *Bile Fulgar.*
53559. *Hasarbija.*
53560. *Pattansali.*
53561. *Sadgar Nandyal.*
53562. *Yidgamfu.*

53563 to 53590.

From Allahabad, United Provinces, India. Seeds collected by Dr. L. A. Kenoyer and Winfield Dudgeon, Ewing Christian College. Received May 27, 1921. Quotes notes by Mr. Dudgeon.

53563. Acacia caesia (L.) Willd. Mimosaceæ.

"A scandent shrub in pioneer monsoon-deciduous forests of peninsular India. Collected at Shankargarh, 25 miles south of Allahabad, April 8, 1921."

The flowers of this climbing shrub are pale yellow and are borne in stalked globose heads forming large panicles. Native to the Dekkan and Canara. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 451.*)

For previous introduction, see S. P. I. No. 30776.

53564. Acacia leucophloea (Roxb.) Willd. Mimosaceæ.

"A conspicuous component of survival thorn scrub on the Indo-Gangetic Plains, and a pioneer in forest areas of peninsular India. Collected at Shankargarh, 25 miles south of Allahabad, April 8, 1921."

A large, fast-growing tree with yellowish bark used in the distillation of spirit. The bark also yields a strong fiber said to be much valued for fishing nets. Native to the plains of the Punjab and Rajputana and the forests of central and southern India and Burma. (Adapted from *Watt, Commercial Products of India, p. 15.*)

For previous introduction, see S. P. I. No. 33432.

53563 to 53590—Continued.

53565. ANOGEISSUS LATIFOLIA (Roxb.) Wall. Combretaceæ.

"Collected at Manikpur, April 21, 1920, in the forests of the low Vindhya Mountains."

A tree 60 to 70 feet high, with smooth, light-colored bark and pale, dull glaucous green leaves with a pink midrib. The small yellow flowers are in dense heads. The tree yields a useful gum, and the wood is very strong and tough. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 482.*)

For previous introduction, see S. P. I. No. 52283.

53566. ANOGEISSUS SERICEA Brandis. Combretaceæ.

"A medium-sized tree in monsoon-deciduous forests of peninsular India. Collected at Shankargarh, near Allahabad, India. April 8, 1921."

A tree with leaves silky pubescent beneath, and yellow flowers in globose heads, one-half to three-quarters of an inch in diameter. The small, leathery, winged fruits are tomentose. Native to Gujarat and Central Provinces, India. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 482.*)

53567. BAUHINIA VAHLII Wight and Arn. Cæsalpiniaceæ.

"A characteristic gigantic climber in climax monsoon-deciduous forests throughout peninsular India and up to 5,000 feet in the Himalayas. Collected in the upper (Himalayan) Ganges Valley, June 1, 1920. I should think it would stand a climate about like that of Virginia."

A climber, sometimes 100 feet long, covered with red-brown tomentum. The large terminal corymbs are composed of white flowers with petals an inch long, turning to cream-yellow. This species is put to more uses than almost any other forest plant except the bamboo. The large flat leaves are sewed together and used as plates, cups, rough tablecloths, umbrellas, cloaks, and rain capes; the seeds are roasted and eaten; the fibers of the bark are made into ropes; and a gum exudes copiously. Native to central and northern India, ascending to 5,000 feet; native name *taur*. (Adapted from *Collett, Flora Simlensis, p. 149.*)

For previous introductions, see S. P. I. No. 33559.

53568. BAUHINIA VARIEGATA L. Cæsalpiniaceæ.

"Native to the climax monsoon-deciduous forests throughout peninsular India and up to 5,000 feet in the Himalayas. Collected in the upper (Himalayan) Ganges Valley at Dharassu, June 1, 1920. I should think it would stand a climate about like that of Virginia."

A moderate-sized tree with short racemes of fragrant flowers, rose colored and variegated with red and yellow. Cultivated throughout India. The light or reddish brown wood is used for agricultural implements. The astringent bark is used for tanning and dyeing; the leaves and flower buds are eaten as vegetables; and the flower buds are often pickled. (Adapted from *Brandis, Forest Flora of India, p. 160.*)

For previous introduction, see S. P. I. No. 32787.

53569. BOSWELLIA SERRATA Roxb. Balsameaceæ.

"Collected near Manikpur, in the forests of the low Vindhya Mountains, April 21, 1920."

A large tree, native to the mountains of India, with pinnate, hairy leaves, racemes of small pink flowers, and smooth capsules the size of an olive. This tree yields a most fragrant resin known as Indian olibanum, used as an ingredient in incense and various ointments. The rough, moderately hard timber is recommended for tea boxes and is used for fuel, for making charcoal, and for the manufacture of doors, bowls, etc. The tree enjoys a considerable immunity from being browsed or lopped for fodder, owing to its resinous leaves, and it has a great capability for withstanding forest fires. It is thus valuable in the reclothing of dry hills. (Adapted from *Transactions of the Asiatic Society in Bengal, vol. 9, p. 379,* and *Watt, Commercial Products of India, p. 174.*)

53563 to 53590—Continued.

53570. CASSIA FISTULA L. Cæsalpiniaceæ.

"Common in pioneer monsoon-deciduous forests throughout peninsular India and up to 4,000 feet in the Himalayas. Collected at Shankargarh, 25 miles south of Allahabad, India, April 8, 1921."

A moderate-sized tree with large, bright-yellow, fragrant flowers in lax, pendulous racemes 1 to 2 feet long. Common throughout India in the forest tracts in Trans-Indus on the hills near Peshawar, and ascends to 4,000 feet in the outer Himalayas. The red wood is beautifully mottled and streaked, hard, tough, is easily worked, and takes a fine polish, but is somewhat brittle and apt to crack. It is, however, very durable and is used for posts, plows, etc. The bark is used for tanning and dyeing, and red juice exudes from wounds in the bark, which hardens into a gum used like kino. The twigs and leaves are lopped for cattle fodder in Oudh and Kumaon. (Adapted from *Brandis, Forest Flora of India, p. 164.*)

For previous introduction, see S. P. I. No. 32316.

53571. CLERODENDRUM INFORTUNATUM Gaertn. Verbenaceæ.

"A component of survival woody vegetation of the plains, where human pressure is heavy. Collected at Shankargarh, 25 miles south of Allahabad, India, April 8, 1921."

An ornamental shrub 3 to 8 feet high, with white, sweet-scented flowers tinged with pink, followed by small black drupes seated on an enlarged pink calyx which sometimes reaches over an inch across the lobes when spread out. The large leaves, 4 to 10 inches long, are 3 to 8 inches wide. (Adapted from *Cooke, Flora of Bombay, vol. 2, p. 432.*)

53572 and 53573. DIOSPYROS TUPRU Buch.-Ham. Diospyraceæ.

A small tree with woolly branchlets and leathery leaves over 3 inches long. The smooth globose fruits are three-fourths of an inch in diameter. Native to the west Dekkan peninsula. (Adapted from *Hooker, Flora of British India, vol. 3, p. 563.*) Received as *Diospyros tomentosa* Roxb., which is now referred to *D. tupru.*

53572. "Collected at Manikpur, April 21, 1920."

53573. "A small tree characteristic in the pioneer monsoon-deciduous forests of peninsular India. Collected at Shivpuri (Sipri), Gwalior State, India, April 2, 1921."

53574. ERIOLAENA HOOKERIANA Wight and Arn. Sterculiaceæ.

"Collected near Manikpur, in the forests of the low Vindhya Mountains, April 21, 1920."

A south Indian shrub or small tree with cordate leaves and few-flowered, lax racemose cymes of long-peduncled flowers 1½ inches across. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 131.*)

53575. EUPHORBIA ROYLEANA Boiss. Euphorbiaceæ.

"A treelike Euphorbia on the rocky cliffs and talus slopes in the range of the Bauhinia monsoon-deciduous forest in the outer Himalayas, at altitudes of 3,000 to 5,500 feet. Collected at Dharassu, upper (Himalayan) Ganges Valley, June 1, 1920. I should think this would stand a climate about like that of Virginia."

A large shrub of cactuslike aspect attaining a height of 15 feet, with ascending 2 to 7 angled, thorny stems, 2 to 3 feet in girth. The sessile entire caducous leaves are inserted along the angles of the branches, and the yellow involucres, half an inch in diameter, are borne in sessile cymes. The milk contains a large amount of gutta-percha which has a sweet odor when fresh and is believed to be of value as a waterproofing material or as a paint for ships. (Adapted from *Collett, Flora Simlensis, p. 446,* and from *Watt, Commercial Products of India, p. 531.*)

53563 to 53590—Continued.

53576. FLACOURTIA SEPIARIA Roxb. Flacourtiaceæ.

"A common pioneer in the thorn forest over rocky peninsular India, and in the survival thorn scrub on the Indo-Gangetic Plains. Collected at Shankargarh, 25 miles south of Allahabad, April 8, 1921."

A shrub with long thorns; the stiff, glabrous, elliptic leaves are from one-half to 1½ inches long, and the small greenish flowers are solitary or in racemose clusters shorter than the leaves. Common in the hilly parts of the Konkan and Dekkan. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 56.*)

For previous introduction, see S. P. I. No. 34093.

53577. GARDENIA LATIFOLIA Ait. Rubiaceæ.

"Collected near Manikpur, in the forest of the low Vindhya Mountains, April 21, 1920."

A small tree 30 feet high, with a rounded head of dark-green glossy foliage and large, terminal, solitary, fragrant, white flowers which turn yellow in the evening; the corolla tube is 2 to 3 inches long. The white, yellowish tinged wood is close and fine grained, easily worked, and durable; combs are made of it, and it has been recommended for engraving and turner's work. Common in dry places in India except in the west. (Adapted from *Brandis, Forest Flora of India, p. 271.*)

53578. HIPTAGE BENGHALENSIS (L.) Kurz. Malpighiaceæ.
(*H. madablota* Gaertn.)

"An evergreen climber throughout India in climax monsoon-deciduous forests. Collected at Uttarkashi, upper (Himalayan) Ganges Valley, May 25, 1920. Will probably grow in a climate similar to that of Virginia."

A tall, climbing shrub with thick, entire glabrous leaves, 4 to 6 inches long and showy, fragrant flowers three-fourths of an inch across, in axillary racemes forming a terminal leafy panicle. The silky white petals have fringed, wavy margins, and the uppermost bears a large yellow spot. Native throughout India, in ravines and moist places, ascending to 3,000 feet. (Adapted from *Collett, Flora Simlensis, p. 56.*)

For previous introduction, see S. P. I. No. 33573.

53579. HOLARRHENA ANTIDYSENTERICA (Roth) Wall. Apocynaceæ.

"Collected near Manikpur, in the forest of the low Vindhya Mountains, April 21, 1920."

A small tree native throughout India, ascending to 3,500 feet, with corymbose cymes of white flowers which have a tube and ovate lobes half an inch long. Both bark and seeds of this plant are among the most important medicines of the Hindus. This is the true *conessi* or *kurtchi* bark and exfoliates in patches; it is astringent, antidysenteric, and anthelmintic. The seed yields a fixed oil and the wood ash is used in dyeing. The soft white wood is largely used for carving, furniture, and turnery. (Adapted from *Collett, Flora Simlensis, p. 311*, and *Watt, Commercial Products of India, p. 640.*)

For previous introduction, see S. P. I. No. 47692.

53580. JUSTICIA ADHATODA L. Acanthaceæ.
(*Adhatoda vasica* Nees.)

"A small survival shrub characteristic to the thorn scrub of peninsular India; and a woody ruderal in overpopulated areas throughout India. It is a pioneer in monsoon-deciduous forests and common up to 4,500 feet in the Himalayas. Collected at Dharassu, upper (Himalayan) Ganges Valley, June 1, 1920, in the Bauhinia forest range. Suitable, I should think, to a climate about like that of Virginia."

A glabrous shrub 4 to 8 feet high, native to India, with white flowers which are streaked and dotted with pink and are 1 to 2 inches long and borne in erect spikes 1 to 3 inches long. (Adapted from *Collett, Flora Simlensis, p. 376.*)

53563 to 53590—Continued.

53581 and 53582. LAGERSTROEMIA PARVIFLORA Roxb. Lythraceæ.

A large tree, native to the Dekkan Peninsula and at the base of the western Himalayas at altitudes of 1,000 feet, which attains a height of 50 to 70 feet with a straight stem often 30 feet to the first branch. The leathery leaves, green and glabrous above, pale or sometimes hoary tomentose beneath, are used to feed tasar silkworms. The white fragrant flowers, half an inch across, are in axillary or terminal panicles. The wood is valued for its timber, which is tough, elastic, and durable. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 612,* and *Brandis, Forest Flora of India, p. 239.*)

For previous introduction, see S. P. I. No. 47703.

53581. "Collected at Manikpur, in the forests of the low Vindhya Mountains, April 21, 1920."

53582. "A component of pioneer monsoon-deciduous forests of peninsular India. Collected at Shankargarh, 25 miles south of Allahabad, India, April 8, 1921."

53583. LEUCOMERIS SPECTABILIS D. Don. Asteraceæ.

"A small tree composite, common in pioneer forest preceding climax Bauhinia forests in the outer Himalayas. Collected at Dharassu, upper (Himalayan) Ganges Valley, June 1, 1920. Suitable probably to a climate like that of Virginia."

A shrub or small tree native to western Himalayan regions at altitudes of 2,000 to 5,000 feet, with entire glabrous leathery leaves densely velvety tomentose beneath, 4 to 14 inches long, and 1½ to 4 inches wide, narrowed at both ends. The white flowers half an inch long are in rounded corymbs, 4 to 8 inches in diameter. The achenes are densely silky with copious pappus. (Adapted from *Hooker, Flora of British India, vol. 3, p. 386.*)

53584. MALLOTUS PHILIPPINENSIS (Lam.) Muell. Arg. Euphorbiaceæ.

"Common in pioneer monsoon-deciduous forests of the outer Himalayas up to 5,000 feet. Collected at Dharassu, upper (Himalayan) Ganges Valley, June 1, 1920. Suitable, I should think, to a climate about like that of Virginia."

A small dicœcious tree with long-stalked leaves glabrous above and rusty tomentose beneath and minutely scarlet dotted. The globose scarlet capsules, one-third of an inch in diameter, are covered with a bright-red powder which is collected for export to be used for dyeing silk and in medicine. Native to India, ascending to 4,500 feet. (Adapted from *Collett, Flora Simlensis, p. 453.*)

53585. MAXIMILIANEA GOSSYPIUM (L.) Kuntze. Cochlospermaceæ. (*Cochlospermum gossypium* DC.)

"Collected near Manikpur, in the forest of the low Vindhya Mountains."

A small tree with palmately lobed leaves, white tomentose beneath, and bright-yellow flowers 4 to 5 inches in diameter, in terminal panicles. Found on a few of the Konkan and Dekkan Hills and often planted near temples. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 53.*)

For previous introduction, see S. P. I. No. 43381.

53586. NATHUSIA SWIETENIOIDES (Roxb.) Kuntze. Oleaceæ. (*Schrebera swietenioides* Roxb.)

"A tree commonly met in climax forests of peninsular India. Collected at Shivpuri (Sipri), Gwalior State, India, April 2, 1921."

A tree 40 to 50 feet high, with smooth pinnate leaves 4 inches long and white, brown-marked flowers, often 100 in each cyme. Native to the tropical Himalayas and the Dekkan Peninsula at altitudes of 1,000 to 4,000 feet, and to Pegu, India. (Adapted from *Hooker, Flora of British India, vol. 3, p. 604.*)

53563 to 53590—Continued.

53587. RANDIA ULIGINOSA (Retz.) Poir. Rubiaceæ.

"Collected near Manikpur, in the forests of the low Vindhya Mountains, April 21, 1920."

A small tree rarely reaching 20 feet high, with reddish brown, scaly bark, thick horizontal branches, many of them terminating in one to two pairs of strong sharp thorns half an inch long. The thin glabrous leaves, pubescent beneath, are clustered on suppressed branchlets. The solitary, fragrant, white flowers are 1 to 2 inches in diameter. The smooth, ovoid yellowish brown fruits, 2 to 3 inches long and containing numerous smooth seeds closely packed in pulp, are eaten after being boiled or roasted. Native throughout the Bombay Presidency. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 699.*)

For previous introduction, see S. P. I. No. 47769.

53588. STERCULIA URENS Roxb. Sterculiaceæ.

"A fine large tree commonly met in peninsular Indian climax deciduous forests, or farther south, in forests immediately preceding the climax. Collected at Shivpuri (Sipri), Gwalior State, India. To be grown where there is little or no danger of frost."

A large Indian tree with a straight trunk and white, smooth, papery bark, the outer surface thin and peeling off, the inner coat fibrous and netted. The glabrous leaves, velvety beneath and 8 to 12 inches long, are crowded at the ends of the branches. The numerous small yellow flowers are in terminal panicles appearing before the leaves. A gum called *katila*, which has been used as an inferior substitute for tragacanth (itself used as a substitute for gum arabic in medicine and in the arts) is obtained from the tree; the seeds are roasted and eaten by the poorer natives and in some parts of India are ground and used as a kind of coffee. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 123.*)

53589. TERMINALIA TOMENTOSA (Roxb.) Wight and Arn. Combretaceæ.

"A climax tree (dominant with *Tectona grandis* farther south) of monsoon-deciduous forests of peninsular India. Collected at Shivpuri (Sipri), Gwalior State, India, April 2, 1921."

A large tree, 80 to 100 feet high, with hard coriaceous leaves 5 to 9 inches long and dull-yellow flowers in erect terminal panicles. A common tree in the moister regions of India; it thrives best in heavy binding soils. The dark-brown wood, mottled with darker streaks, is used in northern India for house building, etc.; it is an excellent fuel and furnishes good charcoal; potash is made of it. The bark is used for tanning and the ashes of the bark are chewed with the betel leaf. The common tasar silkworm feeds on the leaves; lakh is occasionally gathered on the branches, and in Oudh and the Northwest Provinces the leaves are lopped for cattle fodder. (Adapted from *Brandis, Forest Flora of India, p. 226.*)

For previous introduction, see S. P. I. No. 47856.

53590. TRITICUM AESTIVUM L. Poaceæ. Common wheat.
(*T. vulgare* Vill.)

"Purple-stemmed wheat from the Himalayan portion of the Ganges Valley, at Ballu. Collected May 28, 1920. Should grow in a climate like that of Virginia."

53591. EUGENIA LUMA (Molina) Berg. Myrtaceæ.
(*E. apiculata* DC.)

From San Francisco, Calif. Seeds presented by John McLaren, superintendent, Golden Gate Park. Received April 23, 1921.

An ornamental Chilean shrub bearing small edible fruits reported to have a "refreshing flavor."

53592 and 53593.

From Allahabad, United Provinces, India. Seeds collected by Dr. L. A. Kenoyer and Winfield Dudgeon, Ewing Christian College. Received May 27, 1921. Quoted notes by Mr. Dudgeon.

53592. VALLARIS HEYNEI Spreng. Apocynaceæ.

"A twining shrub in pioneer places throughout India. Collected at Dharassu, upper (Himalayan) Ganges Valley, June 1, 1920. Adapted to a climate similar to that of Virginia."

A climbing shrub with white, fragrant flowers, three-fourths of an inch across, in axillary drooping cymes. The oblong, pointed fruits are 6 inches long. Native to the Sutlej Valley and throughout India, ascending to 5,000 feet. It is often cultivated in gardens. (Adapted from *Collett, Flora Simlensis, p. 311.*)

53593. ZIZIPHUS XYLOPYRUS (Retz.) Willd. Rhamnaceæ.

"A small thorny tree characteristic in thorn forests pioneer to monsoon-deciduous forests of peninsular India. Collected at Shivpuri (Sipri), Gwalior State, India, April 2, 1921."

A straggling shrub or, in favorable situations, a tree, with smooth leaves covered beneath with white or yellowish tomentum. The yellowish white to brownish wood is hard and tough, easily worked, and durable, and is used for cart-building and other purposes. The bark is used for tanning; the young shoots, leaves, and fruits serve as fodder for cattle and goats. The hard dry fruit is charred and makes a black dye for leather. The edible kernels are inclosed two to three in a large, thick, hard stone. Native to India and dry hot places in Ceylon. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 242*, and *Brandis, Forest Flora of India, p. 90.*)

53594. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

From Buenos Aires, Argentina. Seeds presented by D. S. Bullock, agricultural trade commissioner, United States Department of Agriculture, American Legation. Received June 18, 1921.

"Seeds of the *cherimoya* from Salta, Argentina." (*Bullock.*)

A tree 15 to 25 feet high, native to Ecuador and Peru. The fruit, considered by many people to be the most delicious of tropical dessert fruits, is light green, thin skinned, somewhat oval, with white, juicy, melting flesh of subacid delicate flavor suggestive of the pineapple and banana. Numerous black seeds are embedded in the flesh. Analysis of the fruit in Hawaii shows percentages as follows: Total solids, 33.81; ash, 0.66; acids, 0.06; protein, 1.83; total sugars, 18.41; fat, 0.14; fiber, 4.29.

Seedlings bear the third or fourth year and produce at least a dozen good fruits. A tree in Madeira is said to have produced 300 fruits in one season. (Adapted from *Popenoe, Manual of Tropical and Subtropical Fruits, p. 161.*)

For previous introduction, see S. P. I. No. 52375.

53595 to 53606. ZEA MAYS L. Poaceæ. Corn.

From Buenos Aires, Argentina. Seeds presented by D. S. Bullock. Received May 18, 1921. Quoted notes by Mr. Bullock.

53595. "1920 harvest."

53596. "1921 harvest."

53597. "*Maiz amarillo viejo*, 1920 harvest. From Luis Dreyfus & Co."

53598. "*Maiz colorado*, 1921 harvest. From Luis Dreyfus & Co."

53599. "*Maiz morocho*, 1920 harvest. From Luis Dreyfus & Co."

53600. "*Maiz colorado viejo*, 1920 harvest. From Luis Dreyfus & Co."

53601. "*Maiz amarillo*, 1920 harvest. From Grain Exchange of Buenos Aires."

53595 to 53606—Continued.

53602. "*Maiz colorado*, 1920 harvest. From Grain Exchange of Buenos Aires."

53603. "*Maiz amarillo canario*, 1920 harvest. From Grain Exchange of Buenos Aires."

53604. "*Maiz morocho perla*, 1920 harvest. From Grain Exchange of Buenos Aires."

53605. "*Maiz colorado Cuarenteno*, 1920 harvest. From Grain Exchange of Buenos Aires."

53606. "*Maiz morocho*, 1920 harvest. From Grain Exchange of Buenos Aires."

53607. Coronilla varia L. Fabaceæ.

From Stockholm, Sweden. Seeds presented by Dr. Robert E. Fries, director, Hortus Botanicus Bergianus. Received May 25, 1921.

A free-flowering European plant which blooms from June until September in Chicago and is at its best in July. The peduncles are crowned with dense umbels of pink and white flowers, and the plant is a pleasing feature for rockeries, ledges, or dry and semishady banks. It is too rampant for the border. (Adapted from *Gardening, vol. 5, p. 337.*)

53608 and 53609.

From Buenos Aires, Argentina. Seeds presented by Sr. Benito Carrasco, director, Botanic Garden. Received May 25, 1921.

53608. Salpichroa rhomboidea (Gill. and Hook.) Miers. Solanaceæ.

An ornamental plant, native to Argentina, with very abundant leafy foliage and creeping, spreading branches which appear to be starred all over with small white flowers. The pretty, ivory-white, transparent berries somewhat resemble the pineapple in flavor and are eaten by the natives. The plant is very effective for covering bare arid spots where nothing else can be grown. It is hardy in Paris, France. (Adapted from *The Garden, vol. 35, p. 367.*)

53609. Ipomoea ficifolia Lindl. Convolvulaceæ. **Morning-glory.**

A large climber from the Kamerun region, with slender stems covered with starlike hairs and discolored leaves placed at intervals of 4 to 5 inches. The cymose inflorescence bears violet-rose, salver-shaped flowers 2 inches across and 2 inches long. The plant flowers from August until the middle of October. (Adapted from *The Gardeners' Chronicle, vol. 22, p. 410.*)

For previous introduction, see S. P. I. No. 8868.

53610. Dendrocalamus strictus (Roxb.) Nees. Poaceæ.

Bamboo.

From Dehra Dun, India. Seeds presented by R. D. Hole, forest botanist, Forest Research Institute and College, through Col. Edwin S. George. Received May 27, 1921.

"Seeds of a beautiful bamboo which has tremendous commercial value." (*George.*)

A bamboo native to India and extending to Burma, which grows on drier ground than bamboos generally. It attains a height of 100 feet and its strength and solidity render it fit for many select technical purposes. This bamboo endures great cold as well as dry heat and is useful for the consolidation of embankments, on account of the network of fibrous roots. It occasionally forms forests of its own, seeds almost annually, which is exceptional among the Bambusaceæ, and is readily grown from seed. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 165.*)

For previous introduction, see S. P. I. No. 40889.

53611. CITRUS GRANDIS (L.) Osbeck. Rutaceæ.
(*C. decumana* Murr.)

From Guayaquil, Ecuador. Seeds presented by Dr. Frederic W. Goding, American consul general. Received May 26, 1921.

"A native Ecuadorian fruit, known locally as *toronja*, which has the appearance of a mammoth orange nearly as large as a medium-sized human head. The arrangement of the interior of the fruit resembles that of the orange, but the color is salmon and the taste an acid bitter similar to but more pronounced than that of the ordinary grapefruit, for which it is being used as a substitute in Ecuador.

"Were this fruit properly cultivated, so as to lessen the coarseness of its pulp, it would be prized as a food and would present an attractive appearance on the table." (*Goding.*)

53612 and 53613.

From Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 15, 1921. Quoted notes by Mr. Rock.

53612. ARISTOLOCHIA ACUMINATA Lam. Aristolochiaceæ.

"Collected between Raheng and Mesawt, Siam, in the rain forest at Pang Ma Kham Pom, 2-days' journey from Raheng, December 18, 1920. A vigorous vine, climbing over shrubs and trees. No flowers seen."

53613. CASSIA FISTULA L. Cæsalpiniaceæ.

"Seeds collected from trees growing wild near Palut, in dry forests with Strychnos, Lagerstroemia, and teak, between western Siam and Lower Burma on the way from Raheng to Mesawt, December 17, 1920. It is a medium-sized tree in these dry forests and is semideciduous in the winter. The yellow flowers are produced in long pendent racemes."

For previous introduction, see S. P. I. No. 32316.

53614. TABERNAEMONTANA DONNELL-SMITHII Rose. Apocynaceæ.

From the city of Guatemala, Guatemala. Seeds presented by Sr. Jorge G. Salas, Dirección General de Agricultura, through Sr. Francisco Villacorta, Guatemalan consul general in New York. Received June 29, 1921.

"Seeds from a large tree which produces the *goma de cojon* of commerce." (*Salas.*)

A large shrub 10 to 20 feet high, occurring in Guatemala from the coast up the slopes of the volcanoes to altitudes of 5,000 feet. The natives call it *cobal* (varnish gum). The thin oblong leaves are 3 to 8 inches long, and the large yellow salver-shaped flowers are in few-flowered cymes. (Adapted from *The Botanical Gazette, vol. 18, p. 206.*)

53615. ERAGROSTIS TREMULA Hochst. Poaceæ. **Grass.**

From Gizeh, Egypt. Seeds presented by Thomas W. Brown, director, Ministry of Agriculture, Horticultural Section. Received June 30, 1921.

An annual, tufted grass, found throughout the Tropics, with ascending or erect stems up to 3 feet in height and light-green, flat leaves tapering to a long point. (Adapted from *Muschler, Manual Flora of Egypt, vol. 2, p. 125.*)

53616. ROLLINIA EMARGINATA Schlecht. Annonaceæ. **Araticuy.**

From Horqueta, Paraguay. Seeds presented by Thomas R. Gwynn, through the American consul, Asuncion, Paraguay. Received June 23, 1921.

"*Chirimouia.* A large fruit, extremely aromatic; the seeds are full of oil." (*Gwynn.*)

For previous introduction, see S. P. I. No. 25528.

53617 to 53620. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Poppelsdorf, Bonn, Germany. Tubers presented by Dr. E. Schaffnit. Received May 25, 1921.

"Potatoes known to be immune to the wart disease." (*Schaffnit.*)

53617. *Pepo.*
53618. *Rheingold.*
53619. *Thieler.*
53620. *Ursus.*

For previous introduction, see S. P. I. No. 33491.

53621. MELILOTUS ALBA Desr. Fabaceæ. **White sweet clover.**

From Groningen, Netherlands. Seeds presented by C. Broekema, director, Groninger Zaaizaadvereeniging. Received June 1, 1921.

Secured for experimental purposes.

For previous introduction, see S. P. I. No. 40937.

53622 and 53623.

From Tripoli, Libia, Africa. Seeds presented by Dr. E. O. Fenzi. Received June 1, 1921. Quoted notes by Dr. Fenzi.

53622. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. **Ragi millet.**

"*Bescna.* The bescna appears to be more prized for forage than for grain, although the natives assure me that it will keep in perfect condition for 100 years. This and *gssab* [S. P. I. No. 53623] are practically the only summer forage plants grown by the Arabs, under irrigation, of course."

53623. PENNISETUM GLAUCUM (L.) R. Br. Poaceæ. **Pearl millet.** (*P. typhoideum* Rich.)

"*Gssab.* The seed of the gssab has a better taste than *bescna* and always commands a higher price on the market. It also grows taller than *bescna* and yields more forage, but will need also much more water. It is claimed that it will ripen seeds in 40 days from date of sowing, which statement, however, I can not guarantee. From what I know *P. glaucum* finds its northern cultural limit in Libia.

53624. AVENA SATIVA L. Poaceæ. **Oat.**

From Aberystwith, Wales. Seeds presented by R. G. Stapledon, director, Welsh Plant-Breeding Station. Received June 4, 1921.

"*Sir Douglas Haig.* A Welsh oat which has more than three grains in a spikelet and was produced by a cross with *Avena nuda* as one of the parents." (*L. E. Thatcher.*)

53625. RUBUS MACRAEI A. Gray. Rosaceæ. **Akala.**

From Honolulu, Hawaii. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 6, 1921.

"Spineless variety from near Shipman Ranch, Kilauea, Hawaii. This variety grows epiphytically in the forks of large koa trees (*Acacia koa* Gray) and on fallen logs of the same species, inaccessible to cattle. The dark-red fruits attain a diameter of nearly 2 inches, are very juicy, and, though slightly bitter, are quite pleasant to the taste. The variety would likely improve under cultivation. The canes do not grow as straight as those of the yellow and red varieties on Mauna Kea (S. P. I. Nos. 53480 to 53482), but they are over an inch in diameter at the base; the whiplike branches are very scandent and rambling. These seeds came from a fern forest at an altitude of 4,500 feet on the slopes of Mauna Loa, Hawaii, May, 1921." (*Rock.*)

53626. AVENA BARBATA WIESTII (Steud.) Hausskn. Poaceæ. **Grass.**

From Gizeh, Egypt. Seeds presented by Thomas W. Brown, director, Ministry of Agriculture, Horticultural Section. Received June 7, 1921.

An erect, sparingly hairy grass up to 2 feet in height, with linear leaves up to 7 inches long. Secured for experimental purposes.

53627 to 53752.

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Garden. Received April 30, 1921.

53627 to 53649. BERBERIS spp. Berberidaceæ. **Barberry.**

53627. BERBERIS AGGREGATA C. Schneid.

A shrub native to thickets in western Szechwan at altitudes of 4,000 to 9,500 feet. It attains a height of 5 feet and bears dense racemes of small yellow flowers followed by salmon-red fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 375.*)

For previous introduction, see S. P. I. No. 52454.

53628. BERBERIS ARISTATA DC.

"A tall-growing ornamental barberry which bears multitudes of large racemes of yellow flowers. Recommended as an ornamental park and garden shrub in the northern sections of the United States." (*F. N. Meyer.*)

Native to the temperate Himalayas, the Nilghiri Mountains, and Ceylon.

For previous introduction, see S. P. I. No. 40144.

53629. BERBERIS ATROCARPA C. Schneid.

An ornamental shrub, 3 to 5 feet tall, with leathery evergreen leaves, shining rich green above and yellowish green beneath. The shrub is native to western Szechwan and there is no other species in that section which has such jet black, almost globose fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, p. 437.*)

53630. BERBERIS CHINENSIS Poir.

"A Chinese barberry, 1 to 3 feet high, found between bowlders and rocks at altitudes of 4,000 to 6,000 feet. It becomes very showy toward the end of summer when its berries, which are produced in great abundance, assume a bright coral-red color." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 36737.

53631. BERBERIS DARWINII Hook.

An evergreen shrub from the island of Chiloe and south Chile, one of the most handsome shrubs for garden hedges. It is hardy in England and in Norway as far north as Christiania. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 74.*)

53632. BERBERIS DICTYOPHYLLA Franch.

A Chinese shrub 4 feet high, erect when young, semiarching with age. The bright grass-green leaves are intensely glaucous below. The stems are also glaucous. The small, pale-yellow flowers are followed by red berries. (Adapted from *The Gardeners' Chronicle, ser. 3, vol. 52, p. 243.*)

For previous introduction, see S. P. I. No. 49056.

53633. BERBERIS FRANCISCI-FERDINANDI C. Schneid.

A rather striking western Chinese barberry 10 feet high, with thin, bright-green leaves, panicles of pendulous yellow flowers, and scarlet oblong fruits half an inch long.

For previous introduction, see S. P. I. No. 52931.

53634. BERBERIS GAGNEPAINI C. Schneid.

A Chinese evergreen shrub 3 to 6 feet high, with leathery leaves, spiny on the margins, and delicate yellow flowers on red pedicels. The ellipsoid fruits are glaucous purple.

For previous introduction, see S. P. I. No. 40147.

53627 to 53752—Continued.

53635. BERBERIS HOOKERI Lem.
(*B. wallichiana* Hook., not DC.)

An erect ornamental spiny shrub 6 to 10 feet high, native to Nepal, with beautiful, spreading, hollylike leaves. The yellow sepals are tinged with red.

For previous introduction, see S. P. I. No. 53090.

53636. BERBERIS LYCIUM Royle.

A shrub, native to Simla and the western Himalayas at altitudes of 3,000 to 9,000 feet; with bright-green, lanceolate leaves paler below and pale-yellow flowers followed by ovoid violet berries covered with bloom. (Adapted from *Collett, Flora Simlensis, p. 22.*)

53637. BERBERIS ORTHOBOTRYS Bienert.

A shrub with somewhat corymbose flowers and oval fruits native to Sergal, Afghanistan, at altitudes of 9,000 to 11,000 feet. (Adapted from *Journal of the Linnean Society, vol. 19, p. 150.*)

For previous introduction, see S. P. I. No. 33021.

53638. BERBERIS POLYANTHA Hemsl.

A Chinese shrub, 6 to 9 feet high, with deep-yellow flowers and salmon-red fruits. Native to western Szechwan. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 376.*)

For previous introduction, see S. P. I. No. 47299.

53639. BERBERIS AGGREGATA PRATTII C. Schneid.

A western Chinese shrub, 6 to 10 feet high, with yellow flowers in narrow panicles and ovoid salmon-red fruits.

For previous introduction, see S. P. I. No. 44527.

53640. BERBERIS STAPFIANA C. Schneid.

A partly evergreen western Chinese shrub, 5 to 6 feet high, with spreading arching stems, pale-yellow flowers, and carmine-red fruits having a slight bloom.

For previous introduction, see S. P. I. No. 37975.

53641. BERBERIS SUBCAULIALATA C. Schneid.

An ornamental Chinese species with clustered lance-shaped leaves, glaucous beneath, and globular reddish yellow fruits.

For previous introduction, see S. P. I. No. 44529.

53642. BERBERIS THIBETICA C. Schneid.

A deciduous Chinese shrub, 3 to 4 feet tall, with purplish, glaucous branches, entire leaves whitish beneath, and yellow flowers followed by red berries. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 2, p. 920.*)

For previous introduction, see S. P. I. No. 49931.

53643. BERBERIS THUNBERGII DC.

An extremely popular garden shrub which assumes brilliant autumn colors. Native to Japan. (Adapted from *Arnold Arboretum Bulletin of Popular Information, ser. 1, No. 33.*)

For previous introduction, see S. P. I. No. 27120.

53644. BERBERIS TISCHLERI C. Schneid.

A western Chinese shrub, 6 to 10 feet high, with papery leaves, shining green above and paler beneath. The yellowish red fruits are covered with a light bloom. (Adapted from *Sargent, Plantae Wilsonianae, vol. 5, p. 355.*)

For previous introduction, see S. P. I. No. 50288.

53627 to 53752—Continued.

53645. BERBERIS UMBELLATA Wall.

A hardy, subevergreen, Himalayan shrub about 3 feet high, with narrow leaves slightly glaucous beneath and umbellike racemes of yellow flowers.

For previous introduction, see S. P. I. No. 49932.

53646. BERBERIS VEITCHII C. Schneid.

A shrub with gracefully arching branches, native to western Hupeh, China; the leathery leaves are pale green and the bronze-yellow flowers have reddish outer surfaces. The black, broadly elliptic fruits are covered with a bloom. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, p. 438.*)

53647. BERBERIS WILSONAE Hemsl.

A beautiful, sometimes partially evergreen, Chinese shrub, 2 to 4 feet high, with abundant, roundish, coral-red berries, somewhat translucent. The leaves assume brilliant tints in autumn. (Adapted from *Curtis's Botanical Magazine, pl. 8414.*)

For previous introduction, see S. P. I. No. 40152.

53648. BERBERIS sp.

Received as *Berberis consimilis*, for which a place of publication has not been found.

53649. BERBERIS sp.

Received as *Berberis leichtlinii*, for which name a place of publication has not been found.

53650 to 53665. CLEMATIS spp. Ranunculaceæ. Clematis.

53650. CLEMATIS AETHUSIFOLIA LATISECTA Maxim.

A free-growing deciduous climber, 5 to 6 feet high, with a great profusion of pale-yellow, bell-shaped flowers. The beautiful downy leaves are 3 to 8 inches long. Native to northern China and Manchuria. (Adapted from *Curtis's Botanical Magazine, pl. 5642.*)

53651. CLEMATIS FUSCA Turcz.

A semiherbaceous climber 8 or 9 feet high, with long-pointed leaflets and solitary, reddish brown urn-shaped flowers which are hairy on the outer surface. Native to northeastern Asia. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 277.*)

For previous introduction, see S. P. I. No. 49936.

53652. CLEMATIS GLAUCA AKEBIOIDES (Maxim.) Rehd. and Wils.

A climber, 6 to 10 feet high, with bronzy yellow flowers, very abundant in dry, hot valleys at altitudes of 7,000 to 10,000 feet in western Szechwan. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 342.*)

53653. CLEMATIS GRATA Wall.

A woody climber with decompound panicles of cream-colored flowers and hairy leaves sometimes smooth above. Native to the temperate and subtropical Himalayas. (Adapted from *Hooker, Flora of British India, vol. 1, p. 3.*)

53654. CLEMATIS GRATA GRANDIDENTATA Rehd. and Wils.

A climbing shrub, 9 to 30 feet high, with smooth leaves, silky hairy below, and cream-colored flowers in axillary clusters of three at the tip of leafless panicles. Native to western Hupeh, China. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 338.*)

53627 to 53752—Continued.

53655. CLEMATIS INTERMEDIA Carr.

A beautiful subshrubby climber, with smooth pinnate leaves; flowers deep violet within, lilac without. The four to six elliptical corolla segments are rolled at the edge and the sharp points recurved. This vigorous hardy species is a hybrid between *Clematis viticella* and the Japanese *C. lanuginosa*. (Adapted from *Revue Horticole, vol. 37, p. 339.*)

53656. CLEMATIS PSEUDOFLAMMULA Schmalh.

For previous introduction, see S. P. I. No. 53141.

53657. CLEMATIS RECTA L.

An ornamental herbaceous perennial 2 to 3 feet high, with masses of large white panicles. Native to southern Europe.

For previous introduction, see S. P. I. No. 30768.

53658. CLEMATIS SPOONERI Rehd. and Wils.

A climbing shrub, 9 to 20 feet high, with silky hairy leaves, yellowish and shining below. The beautiful, thick-textured, white flowers, 3 to 4 inches across, are solitary or in pairs and are covered with dense yellow hair on the outer surfaces. The brown hairy achenes bear feathery styles 1½ inches long. Native to rocky, sun-exposed places of western Szechwan, China. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 334.*)

53659. CLEMATIS TANGUTICA (Maxim.) Korsh.

The handsomest yellow-flowered Clematis in cultivation, the largest flowers being about 4 inches across. The species reaches a height of 8 to 10 feet and bears gray-green leaves and solitary rich-yellow flowers, with long, slender-pointed sepals, downy outside and at the edges. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 367.*)

For previous introduction, see S. P. I. No. 52631.

53660. CLEMATIS VEITCHIANA Craib.

A Chinese woody climber with papery leaves and long loose clusters of gracefully drooping flowers.

For previous introduction, see S. P. I. No. 49938.

53661. CLEMATIS VITALBA L.

The common wild clematis of English hedges. In July it climbs up into the trees, covering them with its numerous panicles of greenish white, scented flowers. In winter its silky tufts adorn the hedgerows. (Adapted from *The Garden, vol. 53, p. 546.*)

53662. CLEMATIS VITICELLA L.

A partially woody climber growing 8 to 12 feet high and bearing solitary blue-purple or rose-colored flowers 1½ inches across. Native to southern Europe. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 285.*)

For previous introduction, see S. P. I. No. 49810.

53663. CLEMATIS sp.

Received as *Clematis serrata*, for which a place of publication has not been found.

53664. CLEMATIS sp.

Received as *Clematis thedriana*, for which a place of publication has not been found.

53665. CLEMATIS sp.

Received as *Clematis vernalis*, for which a place of publication has not been found.

53627 to 53752—Continued.

53666 to 53695. COTONEASTER spp. Malaceæ.

53666. COTONEASTER ACUTIFOLIA Turcz.

A bushy shrub, 5 to 7 feet high, native to northern and western China, with branches often pendulous. The dull-green leaves are paler and hairy beneath, and the white flowers are borne three or more in corymbs. The smooth reddish fruits, one-third of an inch in diameter, are finally black. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 405.*)

53667. COTONEASTER AFFINIS Lindl.

For previous introduction, see S. P. I. 53468.

53668. COTONEASTER AFFINIS BACILLARIS (Wall.) C. Schneid.
(*C. bacillaris* Wall.)

A very graceful shrub, 15 feet high, spreading to a larger diameter. The white flowers, one-third of an inch across, are borne in clusters 1 to 2 inches across. The small, roundish fruits are purplish brown. Native to the Himalayas at altitudes up to 10,000 feet. The strong elastic wood is used for walking sticks and spear shafts in India. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 406.*)

For previous introduction, see S. P. I. No. 40162.

53669. COTONEASTER AFFINIS OBTUSA (Wall.) C. Schneid.

A Himalayan shrub 15 feet high with numerous white flowers on short, leaf-bearing branchlets. One of the prettiest of the genus. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 407.*)

53670. COTONEASTER AMOENA Wilson.

A much-branched shrub, 3 to 5 feet high, with dense-flowered clusters followed by scarlet fruits. Native to Yunnan, China. (Adapted from *Sargent, Plantae Wilsonianæ, vol. 1, p. 165.*)

For previous introduction, see S. P. I. No. 40174.

53671. COTONEASTER APICULATA Rehd. and Wils.

A deciduous shrub, 5 to 8 feet high, with shining green leaves, paler beneath, and small roundish fruits. Native to western Szechwan, China, in upland thickets at altitudes of about 10,000 feet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 156.*)

53672. COTONEASTER BULLATA Bois.

One of the best of the new Chinese shrubs, 10 to 12 feet high, with abundant brilliant-red fruits on the upper sides of long arching shoots. The rosy white flowers soon fall, but the fruits make the plant very handsome toward the end of August. It fruits freely when the plant is only a foot high. (Adapted from *Gardening Illustrated, vol. 40, p. 4.*)

For previous introduction, see S. P. I. No. 43836.

53673. COTONEASTER BUXIFOLIA Wall.

An evergreen bush, 10 to 12 feet high, with long, arching, sparsely branched stems, with dark-green leaves which are smooth above and grayish woolly beneath. The white flowers, one-third of an inch across, are followed by clusters of round, red fruits. Very useful and pretty as a screen. Native to the Nilgiri Hills. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 407.*)

For previous introduction, see S. P. I. No. 33035.

53627 to 53752—Continued.

53674. COTONEASTER DIELSIANA E. Pritz.

A shrub, 3 to 6 feet high, with arching stems, pinkish flowers, and red fruits, native to thickets of western Hupeh at altitudes of 4,000 to 6,000 feet. The small leaves turn deep reddish purple in the fall. (Adapted from *Arnold Arboretum, Bulletin of Popular Information, No. 15.*)

For previous introduction, see S. P. I. No. 43990.

53675. COTONEASTER DIVARICATA Rehd. and Wils.

A shrub, 3 to 6 feet high, with gracefully reflexed branches, shining leaves paler beneath, and rose-colored flowers. The red fruits are ovoid. Native to thickets of western Hupeh, China, at altitudes of 4,000 to 6,000 feet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 157.*)

For previous introduction, see S. P. I. No. 38149.

53676. COTONEASTER FRANCHETII Bois.

An ornamental evergreen shrub 8 to 10 feet high, with gracefully arching branches, with lustrous green leaves covered with a thick whitish to pale-brown felt beneath. The white rose-tinged flowers are followed by orange-scarlet fruits covered with a grayish down. Native to Tibet and western China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 409.*)

For previous introduction, see S. P. I. No. 45705.

53677. COTONEASTER FRIGIDA Wall.

A half-evergreen Himalayan shrub, 20 feet high, bearing large clusters of creamy white flowers followed by scarlet fruits. One of the most beautiful in flower and fruit, but not hardy in the north. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 867.*)

For previous introduction, see S. P. I. No. 47664.

53678. COTONEASTER FRIGIDA Wall.

Variety *aurea.* A yellow-fruited variety.

53679. COTONEASTER HARROVIANA Wilson.

A handsome shrub, 4 to 6 feet high, with somewhat leathery, partially evergreen leaves, shining dark green above and densely tomentose beneath, densely many-flowered corymbs 2 inches across, and white flowers with reddish purple anthers, succeeded by red fruits. Native to Yunnan, China. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 51, pl. 3,* and from *Sargent, Plantae Wilsonianae, vol. 1, p. 173.*)

53680. COTONEASTER HEBEPHYLLA Diels.

A graceful, spreading shrub, 6 to 10 feet high, with white flowers and violet anthers, native to moist open situations at the north end of Chung Tien Plateau at altitudes of 8,500 to 9,000 feet and to the Likiang Valley at altitudes of 8,500 to 14,000 feet. The flowers are clustered 6 to 16 in corymbs. (Adapted from *Notes from the Edinburgh Royal Botanic Garden, vol. 5, p. 273.*)

53681. COTONEASTER HENRYANA (C. Schneid.) Rehd. and Wils.

A deciduous, papery leaved shrub, 6 to 12 feet high, with green roughish leaves, ashy white tomentose beneath. The flat lax corymbs, 2 to 3 inches across, are composed of white flowers with purple anthers. The ovoid fruits are red. Native to western Hupeh and eastern Szechwan, China, in woodlands at altitudes of 4,000 to 6,000 feet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 174.*)

For previous introduction, see S. P. I. No. 40167.

53627 to 53752—Continued.

53682. COTONEASTER HORIZONTALIS Decaisne.

An evergreen Chinese shrub three times as broad as it is tall. The foliage is very small, dark green, and shiny. The white or light-pink flowers are pretty, but the glory of the shrub is in its bright-red berries during the early winter months. (Adapted from *Pacific Garden, vol. 5, p. 11.*)

For previous introduction, see S. P. I. No. 43681.

53683. COTONEASTER LINDLEYI Steud.

A large shrub or small tree, with young branches downy, later bare, and dark brown. The partially evergreen leaves are dark green above and covered with a grayish felt beneath. The white flowers are produced 5 to 10 in a corymb and are succeeded by bluish black fruits. Native to the northwestern Himalayas. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 757.*)

53684. COTONEASTER LUCIDA Schlecht.

A beautiful deciduous shrub of bushy habit, 6 to 8 feet high, with hairy young wood which becomes smooth in a year. The bright-green leaves are whitish green beneath, and the rose-colored flowers are followed by black fruits. Native to Siberia and other parts of northern Asia. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 750.*)

For previous introduction, see S. P. I. No. 29967.

53685. COTONEASTER MELANOCARPA LAXIFLORA (Jacq.) C. Schneid.

A shrub with spreading branches, reaching a height of 6 feet. The dark-green leaves are grayish white tomentose beneath, and the flowers, 12 or more in elongated pendulous corymbs, are followed by black roundish fruits. Native to northern Europe and Siberia. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 866.*)

53686. COTONEASTER MICROPHYLLA Wall.

A dwarf, dense, usually procumbent shrub with small shining dark-green leaves pubescent beneath. The white solitary flowers, one-third of an inch in diameter, are followed by globose bright-red fruits. Native to China and the temperate Himalayas. (Adapted from *Collett, Flora Simlensis, p. 173.*)

53687. COTONEASTER MICROPHYLLA THYMIFOLIA (Loud.) Koehne.

A very dwarf, particularly elegant high alpine form with smooth green leaves pubescent beneath and small white flowers, solitary or in twos. These and the bright-red fruits are smaller than in the species itself. This variety can be grown from cuttings. Native to Nepal, Simla, and the eastern Himalayas. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 760.*)

53688. COTONEASTER MOUPINENSIS Franch.

The common cotoneaster in the thickets and margins of woods throughout western Szechwan at altitudes of 4,000 to 7,000 feet. It is 6 to 15 feet high, with white flowers and jet-black fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 163.*)

For previous introduction, see S. P. I. No. 36739.

53689. COTONEASTER PANNOSA Franch.

A graceful, Chinese evergreen shrub 10 feet high with small grayish green leaves and round, deep-red fruits, considered one of the best winter-fruiting shrubs.

For previous introduction, see S. P. I. No. 40169.

53627 to 53752—Continued.

53690. COTONEASTER RACEMIFLORA (Desf.) Koch.

A low shrub from northern Africa and western Asia, with roundish leaves slightly hairy beneath, and short-stalked cymes of white flowers followed by red fruits.

Received as *Cotoneaster fontanesii*, for which *C. racemiflora* is the earlier name.

For previous introduction, see S. P. I. No. 44082.

53691. COTONEASTER ROTUNDIFOLIA Wall.

An ornamental Himalayan shrub, 4 to 5 feet high, clothed with dark-green, partially evergreen leaves. The small deep-scarlet berries are freely borne and are said to be less attractive to birds than those of other cotoneasters, so that the bushes retain their beauty much longer.

For previous introduction, see S. P. I. No. 47665.

53692. COTONEASTER ROTUNDIFOLIA Wall.

Received as *Cotoneaster prostrata*, for which *C. rotundifolia* is an earlier name.

53693. COTONEASTER SALICIFOLIA FLOCCOSA Rehd. and Wils.

A graceful, western Chinese shrub up to 13 feet high, which bears dense corymbs of white flowers and light-red, roundish fruits; native to altitudes of 7,500 to 9,800 feet.

For previous introduction, see S. P. I. No. 49666.

53694. COTONEASTER SALICIFOLIA RUGOSA (E. Pritz.) Rehd. and Wils.

"A very handsome Chinese shrub having long pendulous branches covered with much-wrinkled lanceolate leaves which have the under surface covered with down. The berries are small, globular, and bright scarlet. They are borne in clusters and, combined with the autumn tints of the foliage, produce a very pretty effect." (*Journal of the Royal Horticultural Society, vol. 38, p. cclii.*)

For previous introduction, see S. P. I. No. 40579.

53695. COTONEASTER SIMONSI Baker.

An ornamental Himalayan shrub 6 feet high. The bright-red berries are said to sometimes cover the shrub so thickly that it is scarcely possible to place one's finger between them.

For previous introduction, see S. P. I. No. 35128.

53696 to 53698. DEUTZIA spp. Hydrangeaceæ.

53696. DEUTZIA CORYMBOSA R. Br.

A pretty Himalayan species of late continuous flowering. It is at its best in July and August when the bush is covered with pure-white flowers. (Adapted from *Gardening Illustrated, vol. 39, p. 501.*)

For previous introduction, see S. P. I. No. 49939.

53697. DEUTZIA GLOBOSA Duthie.

This species, native to western Hupeh, China, bears dense globose panicles of medium-sized creamy white flowers with cup-shaped corollas. (Adapted from *The Gardeners' Chronicle, 3d ser., vol. 40, p. 248.*)

53698. DEUTZIA LONGIFOLIA VEITCHII (Veitch) Rehder.

This deutzia from Yunnan, China, bears its large flowers in dense, many-flowered corymbs. It is one of the handsomest of the deutzias, but has proved hardy only under protection at the Arnold Arboretum. (Adapted from *note by Alfred Rehder.*)

53627 to 53752—Continued.

53699 to 53702. EUONYMUS spp. Celastraceæ.

53699. EUONYMUS HAMILTONIANUS Wall.

A large Himalayan shrub, under favorable circumstances a moderate-sized tree, 30 to 35 feet high, with a short, straight trunk 4 to 5 feet in girth. The clusters of 15 to 30 greenish white flowers are followed by yellow capsules, the seeds of which are entirely surrounded by a scarlet aril. The fruit ripens from August onward. The leaves are brilliantly colored in fall; the wood is beautifully white, compact and close, not very hard, and is used for making spoons. The young shoots and leaves are lopped for fodder. (Adapted from *Brandis, Forest Flora of India, p. 78,* and *Arnold Arboretum Bulletin of Popular Information, No. 13, 1811.*)

53700. EUONYMUS LATIFOLIUS Mill.

A very decorative European shrub or small tree, with handsome foliage and rich rosy red pendulous fruits. The seed coat is orange colored.

53701. EUONYMUS PLANIPES Koehne.

A Japanese shrub or small tree with spreading branches; the leaves, 4 to 5 inches long, are rich red in autumn, and the red fruits burst when ripe and disclose the orange-colored seeds within.

For previous introduction, see S. P. I. No. 40179.

53702. EUONYMUS YEDOENSIS Koehne.

A deciduous Japanese shrub or small tree, growing 10 feet or more high, with pink fruits. The leaves turn a brilliant red in autumn.

For previous introduction, see S. P. I. No. 43688.

53703 to 53706. IRIS spp. Iridaceæ. Iris.

53703. IRIS BULLEYANA Dykes.

A fine western Chinese iris like *Iris clarkei,* with a hollow, unbranched stem. The narrow leaves are glossy above and glaucous beneath. The stem, 15 to 18 inches long, bears a single head of one or two flowers. The falls have a greenish yellow oblong haft, veined and dotted with purple. On the obovate blade the coloring becomes clearer and consists of broken veins and blotches of bright blue-purple on a creamy ground. The extremity is a uniform blue-purple, paler at the edges. The oblanceolate, channeled standards are pale blue-purple with deeper veins and diverge at an angle of about 60°. The keeled, dark-purple styles are held high above the falls. (Adapted from *Dykes, The Genus Iris, p. 30.*)

53704. IRIS CLARKEI Baker.

A curiously local species native to a circumscribed area in the Sikkim and Bhutan region at a height of 6,000 to 11,000 feet, in ground that is swampy half the year and frozen hard under snow during most of the remaining months. The narrow leaves, 2 feet long, droop at the top; the upper surface is polished and shiny, the under side glaucescent. The solid stem is 2 feet long, and bears one or two lateral heads. The falls are blue-purple, blotched with white, and are reflexed laterally. The upper part of the haft is marked with yellow. The reddish purple, lanceolate standards are poised almost horizontally. The styles form the highest point of the flower; they are keeled, very convex, and 1½ inches long. (Adapted from *Dykes, The Genus Iris, p. 29.*)

For previous introduction, see S. P. I. No. 49638.

53705. IRIS FORRESTII Dykes.

A most pleasing iris, like a dwarf *Iris wilsoni,* from which it differs in the less glaucous leaves, clearer yellow, unveined flowers, and upright and not spreading standards. The stems, 12 to 18 inches

53627 to 53752—Continued.

high, bear a single head of two flowers, although a lateral-flowered branch sometimes develops. The short haft bears two central lines and broken lateral veins of brown-purple on a clear-yellow ground. The oblong-ovate blade of the falls is often very long and drooping, of a clear, lemon-yellow color which becomes deeper around the end of the style branches and is there marked with brown-purple veins. The oblanceolate yellow blade of the standards narrows to a deeply channeled haft, yellow, shorter than the falls, and slightly divergent. The broad, short-keeled, deep-yellow styles, often discolored with purple, curve down on to the falls. Native to open mountain pastures on the eastern flank of the Likiang Range in northwestern Yunnan, China, at altitudes of 12,000 to 13,000 feet. (Adapted from *Dykes, The Genus Iris, p. 27.*)

53706. IRIS MELLITA Janka.

A Balkan dwarf iris, native to Thrace and northeastern Asia Minor, with thin swordlike leaves, occasionally tinged with red at the edge, and 3 to 5 inches long. The one-headed stem is from less than an inch to 5 inches high. The whole plant closely resembles *Iris pumila* except that it has that look of refinement which is characteristic of the Balkan as opposed to the Austrian and French dwarf irises. The greenish tube, 1½ to 2 inches long, is mottled with purple. The falls are shorter and broader than the standards, with the blade much reflexed and often pressed against the tube. The gray-white haft is veined with red-brown. The pale, smoky brown blade is veined with fine deep veins. About the end of the beard the texture is more velvety and the color a warm red-purple shot with electric blue. The conspicuous beard is composed of long, thickset hairs, white at the base and blue above. The standards are deeper in color than the falls and finely veined. At the base the veins give place to small dots and blotches. The narrow gray-white styles have a purple keel. (Adapted from *Dykes, The Genus Iris, p. 149.*)

53707 to 53716. LONICERA spp. Caprifoliaceæ. **Honeysuckle.**

53707. LONICERA ALPIGENA L.

A deciduous shrub, 4 to 8 feet high, native to central Europe. The yellow flowers, deeply tinged with red, are borne in pairs. The red, cherrylike fruit is half an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 39.*)

For previous introduction, see S. P. I. No. 49947.

53708. LONICERA DEFLEXICALYX Batal.

A beautiful deciduous shrub native to China and Tibet, showing its yellow flowers to good advantage by producing them on the upper side of the long, feathered branches. It grows 8 feet high and has horizontal or drooping branches and purple young shoots. The dull-green, downy leaves are grayish and hairy beneath, and the fruits are orange-red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 41.*)

For previous introduction, see S. P. I. No. 40186.

53709. LONICERA DIOICA L.

A low-spreading ornamental shrub or vine with yellow flowers tinged with purple, and red berries; native to eastern North America.

53710. LONICERA LANCEOLATA Wall.

"A Himalayan species allied to *Lonicera orientalis*. The grayish green leaves, 2 to 4 inches long, are pubescent beneath, particularly on the veins. The fruits are black." (*Alfred Rehder.*)

53711. LONICERA LONGA Rehder.

An upright shrub with short branches appearing knotty on account of very short internodes and persistent bud scales. The dull-green

53627 to 53752—Continued.

leaves are grayish green and hairy veined beneath. The berries are purple. Native to Hupeh, China. (Adapted from *Rehder in Report of the Missouri Botanic Garden, vol. 14, p. 61.*)

53712. LONICERA MAACKII (Rupr.) Herd.

A bush honeysuckle, native to China and Manchuria, up to 10 feet high, with wide-spreading branches and dark-green leaves, downy on both surfaces; the pure-white flowers an inch in diameter turn yellowish with age and are produced in pairs on the upper side of the branchlets. The fruits are red.

For previous introduction, see S. P. I. No. 33435.

53713. LONICERA OBOVATA Royle.

"A Himalayan species, allied to *Lonicera tangutica*, with very small leaves, small yellowish white flowers, and bluish black fruits." (*Alfred Rehder.*)

53714. LONICERA QUINQUELOCULARIS TRANSLUCENS (Carr.) Zabel.

A sturdy bush, 10 feet high, that flowers freely, native to the Himalayas and China. The long-pointed leaves, rough on the upper surface, are grayish and downy beneath. The creamy white flowers changing to yellow are followed by translucent white fruits. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 54.*)

For previous introduction, see S. P. I. No. 40187.

53715. LONICERA RUPRECHTIANA Regel.

A Manchurian shrub 12 feet high, with dark-green leaves grayish pubescent beneath and pure-white flowers followed by red or yellow fruits.

For previous introduction, see S. P. I. No. 42317.

53716. LONICERA TRICHOSANTHA Bur. and Franch.

A robust deciduous shrub 8 feet high, native to Szechwan, China. The plant has a rounded, dense, leafy habit and a pale grayish aspect. The dull gray-green leaves are paler beneath, and the pale-yellow flowers fade to a deeper shade. The berries are red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 59.*)

For previous introduction, see S. P. I. No. 43856.

53717. PERNETTYA MUCRONATA (L. f.) Gaud.

One of the finest ornamental berry-bearing shrubs, native to South America about the Straits of Magellan. It is one of the hardiest from that continent and is rarely severely injured by frost in the neighborhood of London. The shrub is evergreen, 2 to 5 feet high, and spreads freely by suckers, forming ultimately a dense, low thicket. The white, nodding flowers, one-fourth of an inch long, are produced singly in the axils of the leaves at the end of the shoots. The round berries, up to half an inch in diameter, vary in color from white to pink, lilac, crimson, purple, or almost black and remain on the branches through the winter and following spring. At Kew the berries are untouched by birds. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 127.*)

For previous introduction, see S. P. I. No. 36139.

53718 to 53726. PHILADELPHUS spp. Hydrangeaceæ. **Mock orange.**

53718. PHILADELPHUS ACUMINATUS Lange.

A shrub 10 feet high, native to Yunnan Province, China, and also Japan. The acuminate leaves have conspicuous hard-tipped teeth.

53627 to 53752—Continued.

Closely resembles *P. coronarius*, of which it is often considered a variety.

For previous introduction, see S. P. I. No. 49948.

53719. PHILADELPHUS BRACHYBOTRYS Koehne.

A shrub 10 feet high, native to Kiangsu, China, with thin, elliptic-pointed leaves and 5 to 7 flowered inflorescences up to 1½ inches long. The flowers are over half an inch in diameter, and the fruits are nearly globular. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 273.*)

53720. PHILADELPHUS INCANUS Koehne.

A late-flowering species up to 6 feet high with oval leaves dull grayish beneath and white, charmingly fragrant flowers with an odor like that of hawthorn. The flowers are produced five to nine together on racemes about 2 inches long at the end of short leafy shoots. The flowering season is from middle to late July. Native to Hupeh and Szechwan, China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 135.*)

53721. PHILADELPHUS INODORUS L.

One of the finest and most striking species of the genus, distinguished by its dark glossy green leaves and solitary, squarish unscented flowers 2 inches across. The shrub is 4 to 6 feet high, and is native to the southeastern United States. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 136.*)

53722. PHILADELPHUS LATIFOLIUS Schrad.

One of the finest of the genus, a robust shrub 10 to 20 feet high, as much or more in diameter, native to the southeastern United States. The leaves are dull above and downy beneath, and the pure-white flowers nearly 2 inches wide are produced in the axils of the upper leaves of lateral twigs, usually seven or nine each. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 3, p. 137.*)

53723. PHILADELPHUS SATSUMI Siebold.

An erect Japanese shrub 6 to 8 feet high, with slightly scented white flowers about 1¼ inches across, produced in erect racemes.

53724. PHILADELPHUS SERICANTHUS Koehne.

A white-flowered shrub, 10 feet high; native to thickets of western Szechwan, China, at altitudes of 4,200 feet.

For previous introduction, see S. P. I. No. 52427.

53725. PHILADELPHUS SPECIOSISSIMUS Hort.

"A garden form, probably a hybrid of *Philadelphus grandiflorus*." (*Alfred Rehder.*)

53726. PHILADELPHUS WILSONII Koehne.

A shrub 7 to 20 feet high, native to western Szechwan and western Hupeh, China, with lax racemes 7 inches long. The white flowers are more than 1½ inches across. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 4.*)

53727 to 53730. RHODODENDRON spp. Ericaceæ. Rhododendron.

53727. RHODODENDRON BRACHYCARPUM D. Don.

A handsome hardy Japanese shrub with beautiful foliage and rather compact clusters of large pale-pink or pale straw-colored flowers. (Adapted from *Arnold Arboretum Bulletin of Popular Information, vol. 7, p. 27.*)

THE HIGACHO, AN ANDEAN RELATIVE OF THE PAPAYA. (CARICA SP.; S. P. I. NO. 53754.)

In the high Andes of Ecuador are found several wild species of Carica, similar in general appearance to the papaya but much more frost resistant. The Higacho is one of these. It withstands without injury temperatures as low as 20° F. above zero, and its greenish yellow fruits, about 4 inches long and highly aromatic in character, when cooked with sugar, make an excellent preserve. The species should be crossed with the papaya with a view to obtaining new forms of value for cultivation in California and Florida. (Photographed by Wilson Popenoe, Banos, Ecuador, March 11, 1921; P18484FS.)

AKALA, A GIANT HAWAIIAN RASPBERRY. (RUBUS MACRAEI A. GRAY; S. P. I. No. 53847.)

Recent investigations have brought to light several species of Rubus which promise to prove of value to plant breeders. One of the most striking of these is the Akala of Hawaii, whose fruits sometimes attain 2 inches in diameter. It is not sufficiently hardy to be cultivated in the Temperate Zone, but through crossing with northern raspberries may give rise to new forms of great value for the southern United States. (Photographed by J. F. Rock, Honolulu, Hawaii, May, 1921; 22895D–FS.)

53627 to 53752—Continued.

53728. RHODODENDRON DAVIDSONIANUM Rehd. and Wils.

"A western Chinese shrub 10 feet high, with thinly coriaceous leaves glaucescent beneath and rosy pink, bell-shaped flowers 1 inch across." (*Alfred Rehder.*)

53729. RHODODENDRON DECORUM Franch.

"A western Chinese shrub with glabrous leaves glaucous beneath and broadly bell-shaped white or pink flowers 2 inches across." (*Alfred Rehder.*)

53730. RHODODENDRON RACEMOSUM Franch.

An evergreen shrub, 5 or 6 feet high, one of the most distinct and pretty of the dwarfer Chinese rhododendrons. The soft pink flowers, 1 inch across, widely bell shaped, are produced from the leaf axils of the previous year's wood. Often 6 to 12 inches of the shoot is laden with flowers. It is a charming plant for grouping in low shrubberies. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 374.*)

For previous introduction, see S. P. I. No. 52621.

53731 to 53743. ROSA spp. Rosaceæ. **Rose.**

53731. ROSA CINNAMOMEA L.
(*R. pendulina* L.)

Variety *pyrenaica.*

A graceful rose generally less than 2 feet high, said to be plentiful in the Pyrenees. The rosy red flowers, 2 to 3 inches in diameter, resemble in outline and form the dog-rose of England; the berries are also ornamental. The plant is well suited to rock gardens, but must not be allowed much root room, as it becomes too rampant. (Adapted from *The Garden, vol. 27, pp. 545, 560, and 587.*)

53732. ROSA DAVIDII Crepin.

A pink-flowered, orange-fruited rose, 3 to 18 feet high, native of western Szechwan, China, at altitudes of 4,000 to 9,000 feet. It is the species in China nearest to *Rosa macrophylla* of the western Himalayas. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, p. 322.*)

For previous introduction, see S. P. I. No. 43886.

53733. ROSA DAVIDII ELONGATA Rehd. and Wils.

A western Chinese form with leaflets 2 to 3 inches long, fewer flowers than in the species, and fruits about an inch long. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2997.*)

53734. ROSA LONGICUSPIS Bertol.
(*R. sinowilsoni* Hemsl.)

A rambling bush about 20 feet high, native to western China; with sparse, short prickles, large, dark-green leaves, and very large lax corymbs of white flowers which are up to 2 inches wide. (Adapted from *Kew Bulletin of Miscellaneous Information, 1906, p. 158.*)

For previous introduction, see S. P. I. No. 49683.

53735. ROSA MOLLIS Presl.

A compact Asiatic rose, often not more than 3 feet high, with usually pink, occasionally white, flowers and early ripening, red, pulpy fruits which are often pendulous and are very ornamental. (Adapted from *Willmott, The Genus Rosa, pl. 138.*)

For previous introduction, see S. P. I. No. 49952.

53627 to 53752—Continued.

53736. ROSA OMEIENSIS Rolfe.

A shrub 6 to 18 feet high, with solitary, white, 4-petaled (rarely 5-petaled) flowers and scarlet fruits having fleshy orange-colored stalks. Abundant in upland thickets on the higher mountain ranges of western Hupeh and Szechwan, China. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 331.*)

For previous introduction, see S. P. I. No. 44400.

53737. ROSA OMEIENSIS Rolfe.

Variety *atrosanguinea.*

A red-flowered variety.

53738. ROSA OMEIENSIS PTERACANTHA (Franch) Rehd. and Wils.

A shrub 3 to 9 feet tall with white flowers and red fruits having usually a shorter stalk than in the type. Very common on the wind-swept mountain sides of western Szechwan. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 332.*)

For previous introduction, see S. P. I. No. 48407.

53739. ROSA SERAFINII Viv.

A dwarf shrub with bright rose-colored, solitary flowers and small red fruits changing to black, native to the Mediterranean region. (Adapted from *Curtis's Botanical Magazine, pl. 7761.*)

For previous introduction, see S. P. I. No. 49953.

53740. ROSA SERTATA Rolfe.

A pretty rose 2 to 6 feet high, with small pink flowers and orange-red fruits; native to central China. (Adapted from *Sargent; Plantae Wilsonianae, vol. 2, p. 327.*)

For previous introduction, see S. P. I. No. 43912.

53741. ROSA WEBBIANA Wall.

An Himalayan rose with glaucous young shoots with large white thorns, pink flowers, and red nodding fruits. (Adapted from *Willmott, The Genus Rosa, pl. 76.*)

53742. ROSA WOODSII Lindl.

A shrub 3 feet high with leaves about an inch long and pubescent beneath, and corymbose or solitary pink, rarely white, flowers about 2 inches across. The flowering season is June to July. Native to North America from Saskatchewan to Colorado and Missouri. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2993.*)

53743. ROSA sp.

Received as *Rosa polyphylla* for which a place of publication has not been found.

53744 to 53752. VIBURNUM spp. Caprifoliaceæ.

53744. VIBURNUM COTINIFOLIUM D. Don.

A species 6 to 12 feet high, closely allied to *Viburnum lantana,* native to the Himalayas from Bhotan to Beluchistan. The young branchlets, the under surface of the leaves, and the flower stalks are clothed with a dense, gray down. The white, pink-tinged, broadly funnel-shaped flowers are produced in rounded cymes 2 to 3 inches across. The red, ultimately black, fruits are up to half an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 645.*)

For previous introduction, see S. P. I. No. 33062.

53627 to 53752—Continued.

53745. VIBURNUM DILATATUM Thunb.

This profusely flowering shrub, 6 to 10 feet high, is native to Japan and China and produces pure-white flowers in cymes 3 to 5 inches across, not only at the top of the branch but from short twigs down the sides also. The bright-red fruits are one-third of an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 647.*)

For previous introduction, see S. P. I. No. 45974.

53746. VIBURNUM HUPEHENSE Rehder.

A species allied to *Viburnum wrightii*, native to central China and hardy at the Arnold Arboretum. The leaves are densely pubescent beneath, and the fruits are dark red. (Adapted from *Bailey, Standard Cyclopedia, vol. 6, p. 3463.*)

For previous introduction, see S. P. I. No. 44404.

53747. VIBURNUM ICHANGENSE (Hemsl.) Rehder.

A white-flowered, red-fruited shrub with yellowish green leaves; native to China. (Adapted from *Sargent, Trees and Shrubs, vol. 2, pt. 2, p. 105.*)

For previous introduction, see S. P. I. No. 43733.

53748. VIBURNUM LOBOPHYLLUM Graebn.

A shrub which belongs to the group of red-fruited Asiatic species containing *Viburnum wrightii, V. betulifolium, V. dilatatum*, etc. The white-flowered corymbs are 2 to 4 inches wide; and the bright-red, roundish fruits are one-third of an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 652.*)

For previous introduction, see S. P. I. No. 42198.

53749. VIBURNUM OVATIFOLIUM Rehder.

A species native to thickets of western Hupeh, China, at altitudes of 4,000 to 7,000 feet, with bright-red ovoid fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 113.*)

53750. VIBURNUM RHYTIDOPHYLLUM Hemsl.

One of the most distinct and striking of the newer Chinese shrubs; it is an evergreen 10 feet high, and its flower clusters, 4 to 8 inches across, are formed and partially developed in autumn. The beauty of the shrub lies in its bold, wrinkled, shining leaves and red fruits which later become shining black. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 655.*)

For previous introduction, see S. P. I. No. 42199.

53751. VIBURNUM THEIFERUM Rehder.

A white-flowered, red-fruited shrub up to 12 feet high, native to central and western China, and allied to *Viburnum phlebotrichum*. The specific name refers to the use of the leaves by the monks of Mount Omei as a kind of tea. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 657.*)

53752. VIBURNUM VEITCHII C. H. Wright.

One of the most ornamental of the Lantana group, about 5 feet high, with young branches, leafstalks, and under surfaces of the leaves densely clothed with starlike down; the white flowers are in cymes 4 to 5 inches across, and the red fruits later become black. Native to central China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 659.*)

For previous introduction, see S. P. I. No. 40599.

53753. Sclerocarya caffra Sond. Anacardiaceæ.

From Mount Silinda, Southern Rhodesia, Africa. Seeds presented by Dr. W. L. Thompson. Received May 27, 1921.

"A tree not found in our forests, but common in the open forest country. It would seem probable that the fruit, improved by selection and breeding, ought to become quite valuable and attractive for the seed used as a nut, if not for the pulp, since the flavor of the kernel is pleasant, especially if slightly roasted. The shell is very hard and tough, but one can obtain the kernel without cracking it by prying off with a strong iron point the cap with which the shell is provided. If the kernel were larger and the cap could be removed more easily, it might be quite an attractive nut. As it is, the natives often crack the nuts and eat the kernels." (*Thompson.*)

For previous introduction, see S. P. I. No. 52216.

53754 to 53758.

From Quito, Ecuador. Collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received June 8, 1921. Quoted notes by Mr. Popenoe.

53754. Carica chrysopetala Heilborn. Papayaceæ. **Higacho.**

"(No. 610a. Quito, Ecuador. May 7, 1921.) Seeds of *higacho* from Banos, Province of Tungurahua, where it is common in gardens. It does not appear to be grown in Ambato. In the Provinces of Pichincha and Imbabura it is called *chamburo* and is fairly abundant in the larger towns, such as Quito, Otavalo, and Ibarra. In the Azuay it is called *chamburao* and in Loja *toronchi;* in the former Province it is fairly abundant, but in the latter, with the exception of the northern portion, it appears to be little known.

"This plant resembles *C. candamarcensis* in general appearance, though it can readily be distinguished by its leaves which are glabrous or nearly so, while those of *C. candamarcensis* are pubescent below. The fruits of the *higacho* are also quite distinct; they are slender oblong, truncate at the base and acute at the apex, and commonly 4 to 6 inches long. When ripe they are greenish to deep yellow; the flesh is thin, even more aromatic than that of *C. candamarcensis,* and used only when cooked in the form of a sweet conserve or dulce. The species is probably indigenous to the Ecuadorian Andes."

For an illustration of fruits of the higacho, see Plate V.

53755. Crataegus stipulosa (H. K. B.) Steud. Malaceæ.

"(No. 604. Quito, Ecuador. May 7, 1921.) Plants of *Huagra-manzana* or *manzana silvestre,* from the Protestant cemetery in Quito. This plant, which grows wild along some of the ravines in the vicinity of Quito and is occasionally seen in cultivation, becomes a slender tree 20 to 25 feet high. It has elliptic-lanceolate, serrate leaves and produces during March, April, and May round yellow fruits about an inch in diameter. These are almost identical with *tejocotes* of Mexico and the *manzanilla* of Guatemala; the flesh is whitish, mealy, and rather dry, of pleasant flavor suggesting that of the apple. The seeds are larger and rough. During the ripening season the fruits are commonly sold in the markets of Quito.

"For trial in the United States as a stock plant for other rosaceous fruits; as a fruit-bearing species it is less valuable than some of its Central American congeners."

53756. Onoseris salicifolia H. B. K. Asteraceæ.

"(No. 605a. Loja, Ecuador, May 7, 1921.) Seeds of a half-shrubby composite which grows in the region of Loja and also in other parts of southern Ecuador at altitudes of 7,000 to 8,000 feet. It is 5 feet high and produces an abundance of lavender-blue flowers about 2 inches in diameter. It is a pretty perennial, worthy of trial in the United States as an ornamental plant."

53754 to 53758—Continued.

53757. SALVIA SQUALENS H. B. K. Menthaceæ. **Sage.**

"(No. 606a. Loja, Ecuador, May 7, 1921.) Seeds of a handsome species collected near Loja, in southern Ecuador. The plants, which grow commonly on dry and rocky slopes, produce spikes of tubular flowers varying in color from a beautiful salmon pink or coral pink to bright scarlet. Should be tested in the United States as an annual."

53758. SENECIO PIMPINELLAEFOLIUS H. B. K. Asteraceæ.

"(No. 607a. Loja, Ecuador, May 7, 1921.) Seeds of a pretty composite, collected in the mountains south of Loja, where it grows at altitudes of 6,000 to 8,000 feet. The plant is acaulescent, forming a rosette of leaves which lie close to the ground; the flowers, which are produced on stems rising 10 to 20 inches long, are a burnt-orange color and very attractive. The general character of the plant suggests the Transvaal daisy (*Gerbera jamesoni*)."

53759 and 53760. RUBUS MACRAEI A. Gray. Rosaceæ. **Akala.**

From Mauna Kea, Hawaii. Collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 7, 1921. Quoted notes by Mr. Rock.

53759. "Cuttings of a beautiful orange-green variety of the Hawaiian giant raspberry, from an altitude of 6,000 feet on Mauna Kea, Hawaii, May 13, 1921."

53760. "Roots of a reddish black to purple variety of the Hawaiian giant raspberry, from an altitude of 6,000 on Mauna Kea, Hawaii, May 13, 1921."

53761. CARICA PAPAYA L. Papayaceæ. **Papaya.**

From Swatow, China. Seeds presented by A. H. Page. Received June 21, 1921.

"Seeds of a brown-seeded papaya. All our other varieties have gray and black seeds." (*Page.*)

53762 to 53842.

From the city of Guatemala. Seeds presented by Sr. Ad. Tonduz, Dirección General de Agricultura. Received June 20, 1921. Quoted notes by Sr. Tonduz.

53762. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"*No. 1.* From Municipio de Jocotenango, Huehuetenango."

53763. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 2.* From Santo Tomas Chichicastenango, Quiche."

53764 to 53778. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53764. "*No. 6b.* From San Miguel, Quiche."

53765. "*No. 4.* From San Antonio S., San Marcos."

53766. "*No. 5. Frijol negro.* From Santa Catarina B., Sacatepequez."

53767. "*No. 6b.* From San Miguel, Quiche."

53768. "*No. 6a.* From San Pedro las H., Sacatepequez."

53769. "*No. 6c.* From San Pedro La Laguna, Solola."

53770. "*No. 7. Frijol negro enredador.* From Barillas, Huehuetenango."

53771. "*No. 8a. Frijol negro enredador nebaj.* From Quiche."

53772. "*No. 8b.* From San Sebastian, Huehuetenango."

53773. "*No. 10. Frijol negro enredador.* From Chimaltenango."

53762 to 53842—Continued.

53774. "*No. 12. Frijol negro de suelo.* From San Andres C., Sacatepequez."

53775. "*No. 13. Frijol negro de vara.* From San Rafael, San Marcos."

53776. "*No. 14. Frijol negro de vara.* From Sipacapa, San Marcos."

53777. "*No. 17. Frijol negro mateado.* From Aguacatan."

53778. "*No. 15. Frijol negro colas enredador.* From Patzum, Chimaltenango."

53779. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 18. Frijol chamborote negro oscuro enredador.* From Santa Isabel, Huehuetenango."

53780. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"*No. 20. Frijol negro ishtapacal.* From Nuevo Progreso, San Marcos."

53781 to 53787. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53781. "*No. 21a. Frijol colorado.* From San Andres C., Sacatepequez."

53782. "*No. 22.* Chimaltenango, Chimaltenango."

53783. "*No. 23. Frijol negro de milpa.* From San Martin, Chimaltenango."

53784. "*No. 24. Frijol negro pequeño mata.* From Cuilapa, Santa Rosa."

53785. "*No. 25. Frijol negro pequeño.* From Japalmico, San Marcos."

53786. "*No. 26. Cuarenteno negro.* From Ciudad Vieja, Sacatepequez."

53787. "*No. 27. Frijol negro cuarenteno.* From San Pedro la Laguna, Solola."

53788. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 28. Frijol negro chamborote.* It bears prolifically. From San Juan Acatan, Huehuetenango."

53789. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

"*No. 29. Frijol negro de mata.* From Barillas, Huehuetenango."

53790. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 30. Frijol negro grande.* From Tajumulco, San Marcos."

53791 to 53795. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53791. "*No. 31. Frijol negro.* From Vaina Morada, Chimaltenango, Chimaltenango."

53792. "*No. 32. Frijol de sarco.* From Zacualpa, Quiche."

53793. "*No. 33a. Frijol negro.* From San Martin, Chimaltenango."

53794. "*No. 33b.* From Huehuetenango."

53795. "*No. 35. Frijol de ricgo mateado.* From Aguacatan, Huehuetenango."

53796 to 53799. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

53796. "*No. 37.* From San Pedro, Huehuetenango."

53797. "*No. 38a. Frijol amarillo anaranjado Llamado Tsiche enredador.* From Santa Isabel, Huehuetenango."

53798. "*No. 38b. Frijol ixich ojolenam.* From San Marcos."

53799. "*No. 38c.* From Municipio de Aguacatan, Huehuetenango."

53762 to 53842—Continued.

53800. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

"*No. 40. Frijol amarillo.* From San Lucas, Sacatepequez."

53801 to 53803. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

53801. "*No. 41a. Frijol amarillo.* From San Juan A., Huehuetenango."

53802. "*No. 42a.* From San Sebastian, Huehuetenango."

53803. "*No. 42b. Frijol amarillo.* From Ixtapacal, San Rafael, San Marcos."

53804 and 53805. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53804. "*No. 43. Frijol amarillo de milpa.* From San Martin, Chimaltenango."

53805. "*No. 45.* From Chimaltenango."

53806. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 46. Frijol piligue colorado.* From San Lorenzo el Cubo, Sacatepequez."

53807 and 53808. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53807. "*No. 47a. Frijol piligue colorado.* From Senacoj, Sacatepequez."

53808. "*No. 47b.* From Aguacatan, Huehuetenango."

53809 to 53812. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

53809. "*No. 48. Frijol piligue colorado enredador.* From Comalapa, Chimaltenango."

53810. "*No. 49b. Frijol piligue blanco.* From Patzum, Chimaltenango."

53811. "*No. 49a.* From San Juan Acatan, Huehuetenango."

53812. "*No. 50.* From San Lorenzo, Sacatepequez."

53813. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"*No. 51. Frijol tripa de gallina.* From Nuevo Progreso, San Marcos."

53814 to 53817. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53814. "*No. 52. Frijol gato enredador.* From Patzum, Chimaltenango."

53815. "*No. 53.* From San Sebastian, Huehuetenango."

53816. "*No. 54a. Frijol Kinak-Shak.* From Santiago, Sacatepequez."

53817. "*No. 54b.* From Colotenango, Huehuetenango."

53818 and 53819. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

53818. "*No. 55. Pilique morado enredador.* From Patzum, Chimaltenango."

53819. "*No. 56. Giloy pintillo.* From Santa Maria Dej, Sacatepequez."

53820 to 53823. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53820. "*No. 57. Frijol varitas.* From San Antonio A. C., Sacatepequez."

53821. "*No. 58. Frijol riñon.* From Duenas, Sacatepequez."

53822. "*No. 59. Pinto negro sotero.* From Acatenango, Chimaltenango."

53823. "*No. 60. Pintillo.* From Pastores, Sacatepequez."

53762 to 53842—Continued.

53824. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

"*No. 61. Frijol Escumite.* From Nuevo Progreso, San Marcos."

53825 to 53834. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

53825. "*No. 62. Frijol sardo.* From San Mateo Ma, Sacatepequez."

53826. "*No. 63. Frijol pinto.* From San Lucas, Sacatepequez."

53827. "*No. 64.* From Chimaltenango."

53828. "*No. 65. Frijol retinto del suelo.* From Jutiapa."

53829. "*No. 66. Frijol pinto oscuro.* From Quezaltenango."

53830. "*No. 67. Frijol pinto enredador.* From Chiantla."

53831. "*No. 68. Frijol pinto de vara.* From Nuevo Progreso, San Marcos."

53832. "*No. 69. Pinto Lengua de vaca.* From San Martin J., Chimaltenango."

53833. "*No. 70. Frijol pinto.* From Quezaltenango."

53834. "*No. 71. Frijol pinto.* From San Mateo Ma, Sacatepequez."

53835. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

"No. 72. *Frijol yurnas.* From Jutiapa."

53836. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.

"No. 73. *Frijol morado excapacal.* From San Antonio S., San Marcos."

53837 to 53840. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

53837. "*No. 74. Frijol rosado enredador.* From Jutiapa."

53838. "*No. 75. Frijol ixcaco enredador.* From Parramos, Chimaltenango."

53839. "*No. 76. Frijol color de café.* From Quezaltenango."

53840. "*No. 77. Frijol peruano de suelo.* From Parramos, Chimaltenango."

53841. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.

Mixed (spilled) brown, black, reddish, etc., beans.

53842. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

Mixed (mostly white).

53843. IPOMOEA sp. Convolvulaceæ. **Morning-glory.**

From Calcutta, India. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received June 1, 1921.

"A beautiful morning-glory cultivated in the Botanic Garden at Sibpur, Calcutta. It is a strong climber and is said to have red flowers. Collected in March, 1921." (*Rock.*)

53844. TARAKTOGENOS KURZII King. Flacourtiaceæ. **Chaulmoogra tree.**

From Burma, India. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received June 8, 1921.

"True chaulmoogra from the upper Chindwin River." (*Rock.*)

For previous introduction, see S. P. I. No. 43227.

53845. SALVADORA PERSICA L. Salvadoraceæ.

From Khartum, Sudan, Africa. Seeds presented by R. E. Massey, Government botanist. Received June 27, 1921.

A shrub or small tree easily reproduced from seed, though of slow growth, common on the shores of Lake Chad and growing in dense clumps from 3 to 10 feet high near Shibam, Hadramaut, etc. The twigs are used as a tooth cleanser by the natives of Portuguese East Africa. The wood is white and soft and weighs about 45 pounds per cubic foot. The shoots and leaves are pungent. They are eaten as salad and given as fodder to camels; the fruits, bitter, pungent, and aromatic, are used with the leaves and shoots as a relish. The root bark is acrid and vesicant. The seed contains about 45 per cent of fat, suitable for the manufacture of candles. A vegetable salt called *kegr* is obtained from the ash of this plant in northern Nigeria. The seed cake is useful as a manure; analysis shows that it contains nitrogen 4.8 per cent, potash 2.8 per cent, and phosphoric acid 1 per cent. (Adapted from *Holland, Useful Plants of Nigeria, pt. 3, p. 427.*)

For previous introduction, see S. P. I. No. 7362.

53846. SOLANUM COMMERSONII Dunal. Solanaceæ. **Wild potato.**

From Montevideo, Uruguay. Tubers presented by Sr. Luis Guillot, Dirección General de Paseos Públicos. Received June 28, 1921.

"A Solanum with angled stems and leaves 4 to 8 inches long with two to four pairs of leaflets, the terminal one somewhat larger. The corolla is white or pale violet, pubescent on the outer surface. Native to eastern Argentina and Uruguay, usually in moist situations." (*W. F. Wight.*)

For discussion of experiments with this species in France, see Labergerie, Une Nouvelle Pomme de Terre (Solanum commersonii), Revue Horticole, vol. 78, p. 303).

For previous introduction, see S. P. I. No. 17054.

53847. RUBUS MACRAEI A. Gray. Rosaceæ. **Akala.**

From Mauna Kea, Hawaii. Cuttings collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 7, 1921.

"The Hawaiian giant raspberry, reddish black to purple variety, from an altitude of 4,500 feet, on the Shipman Ranch, Mauna Loa, Hawaii, May 13, 1921." (*Rock.*)

For introduction of roots, see S. P. I. No. 53760.

For an illustration of the fruit of this raspberry, see Plate VI.

53848. HYPHAENE THEBAICA (L.) Mart. Phœnicaceæ. **Doum palm.**

Received through the United States Department of State, June 24, 1921.

A palm 25 feet high, distributed from Upper Egypt to central Africa. The stems of old trees are sometimes forked three or four times. The yellowish brown, beautifully colored fruits are borne in long clusters of one to two hundred. In Upper Egypt the poorer classes eat the fibrous, mealy fruit husk, which tastes much like gingerbread, but is rather hard and husky. The hard tough wood is used for domestic utensils. (Adapted from *Lindley and Moore, Treasury of Botany, vol. 2, p. 612.*)

For previous introduction, see S. P. I. No. 51440.

53849. PINUS MASSONIANA Lambert. Pinaceæ. **Pine.**

From Hongkong, China. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 1, 1921.

"The Hongkong pine, the most common tree of the island of Hongkong, growing well on sandy soil and much planted to check erosion. It is a rare pine and sparingly cultivated in America. Suited for northern Florida. Collected April, 1921." (*Rock.*)

For previous introduction, see S. P. I. No. 34548.

53850. Lecythis zabucajo Aubl. Lecythidaceæ. Sapucaia nut.

From Port of Spain, Trinidad. Seeds presented by Eugene André. Received June 30, 1921.

A large tree attaining a height of 80 or more feet and expanding into large heads of glossy foliage. The seeds, known as sapucaia nuts, are greatly superior in flavor to the closely allied Brazil nut (*Bertholletia nobilis*) and much easier to digest. They are rather more than 2 inches long and 1 inch wide, covered with a longitudinally furrowed corky shell, and grow in large, hard, woody fruits shaped like urns which measure 6 inches across and have close-fitting lids. Native to tropical America and Africa. (Adapted from *Lindley, Treasury of Botany, p. 667.*)

53851 and 53852.

From Melbourne, Victoria, Australia. Seeds presented by F. H. Baker. Received June 29, 1921.

53851. Cassia laevigata Willd. Cæsalpiniaceæ.

An erect glabrous shrub several feet in height. The yellow flowers, with petals from one-half to three-quarters of an inch broad, are in axillary and terminal racemes. The leathery pods are 2 to 3 inches long, cylindrical or more or less inflated when ripe. Native to Queensland and New South Wales. (Adapted from *Bentham, Flora Australiensis, vol. 2, p. 282.*)

53852. Eucalyptus risdoni Hook. f. Myrtaceæ.

An ornamental glaucous-leaved tree 20 to 50 feet high, with somewhat pendulous branches, smooth flaky bark, and with buds, flowers, and fruits similar to those of *Eucalyptus amygdalina*, but slightly larger.

For previous introduction, see S. P. I. No. 51064.

53853 to 53855. Fragaria spp. Rosaceæ. Strawberry.

From Bedford, England. Plants presented by Laxton Bros. Received March 15, 1921. Numbered June 30, 1921.

53853. Fragaria sp.

Laxtonian strawberry. A vigorous midseason variety said to produce bold clusters of large fruits 2½ inches across, the center ones wedge shaped, having very firm, rich glossy crimson flesh which retains its color well. The flavor is reported excellent, and the secondary fruits are said to be very even in size, making the variety a continuous cropper not running very small, as some varieties do in the third picking.

53854. Fragaria sp.

Royal Sovereign. Reported as a careful reselection from the strongest and most vigorous stock of the best early varieties for forcing and outdoor use.

53855. Fragaria sp.

Received without description.

53856 to 53894.

From the city of Guatemala, Guatemala. Seeds presented by Sr. Ad. Tonduz, Dirección General de Agricultura. Received June 29, 1921. Quoted notes by Sr. Tonduz.

53856. Cajan indicum Spreng. Fabaceæ. Pigeon-pea.

"*No. 96.* From Nuevo Progreso, San Marcos."

53857. Capsicum annuum L. Solanaceæ. Red pepper.

"*No. 105.* From Asuncion Mixa, Jutiapa."

53858. Cicer arietinum L. Fabaceæ. Chick-pea.

"*No. 99.* From San Pedro La Laguna, Solola."

53856 to 53894—Continued.

53859. DOLICHOS LABLAB L. Fabaceæ. Bonavist bean.

"*No. 95.* Frijol alverjón. From San Rafael, San Marcos."

53860. LINUM USITATISSIMUM L. Linaceæ. Flax.

"*No. 109.* Linaza. From Santa Lucia, Solola."

53861 and 53862. ORYZA SATIVA L. Poaceæ. Rice.

53861. "*No. 106a. Arroz en granza.* From Tecuaco, Chiquimulilla, Santa Rosa."

53862. "*No. 106b. Arroz en granza.* From Chiquimulilla, Santa Rosa."

53863. PISUM SATIVUM L. Fabaceæ. Garden pea.

"*No. 97.* From Santa Cruz Balanaja, Chimaltenango."

53864. SESAMUM ORIENTALE L. Pedaliaceæ.

"*No. 104. Ajonjoli.* From Chiquimulilla, San Marcos."

53865. TRITICUM AESTIVUM L. Poaceæ. Common wheat. (*T. vulgare* Vill.)

"*No. 107a.* From San Miguel, Acatan."

53866. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

"*Frijol colorado pirrunchin.* From Jutiapa."

53867. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.

"*No. 78. Frijol piloy colorado.* From Ciudad Vieja, Sacatepequez."

53868. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

"*No. 79. Frijol blanco ishtapacal.* From Nuevo Progreso, San Marcos."

53869 to 53872. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.

53869. "*No. 80. Frijol piloy.* From Duenas, Sacatepequez."

53870. "*No. 81. Frijol piloy.* From Parramos, Chimaltenango."

53871. "*No. 82. Frijol piloy colorado.* From Pastores, Sacatepequez."

53872. "*No. 83. Frijol piloy.* From Xenacoj, Sacatepequez."

53873 to 53878. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

53873. "*No. 84. Pequeño café.* From Tajumulco, San Marcos."

53874. "*No. 85a. Frijol blanco de vara.* From Santa Maria de J., Sacatepequez."

53875. "*No. 85b. Frijol blanco de vara.* From San Rafael, Marcos."

53876. "*No. 85c. Frijol blanco de suelo.* From Camalapa, Chimaltenango."

53877. "*No. 86a.* From San Pedro La Laguna, Solola."

53878. "*No. 86b.* From San Pedro La Laguna, Solola."

53879. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.

"*No. 87. Frijol blanco grande.* From San Antonio, San Marcos."

53880 to 53890. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

53880. "*No. 88. Frijol blanco.* From San Mateo, Sacatepequez."

53881. "*No. 89a.* From Magdalena, Sacatepequez."

53882. "*No. 89b.* From Acatenango, Chimaltenango."

53883. "*No. 90a. Frijol blanco enredador.* From Chimaltenango."

53884. "*No. 90b.* From Zaragoza, Chimaltenango."

53885. "*No. 90c.* From Itzapa, Chimaltenango."

53856 to 53894—Continued.

53886. "*No. 90d. Frijol blanco lacandor.* From Parramos, Chimaltenango."

53887. "*No. 91. Frijol colima.* From San Rafael, San Marcos."

53888. "*No. 92. Frijol colorado camalapa enredcdor.* From Chimaltenango."

53889. "*No. 93. Frijol blanco de curedo.* From La Candelaria, Barillas, Huehuetenango."

53890. "*No. 94.* From San Antonio S., San Marcos."

53891. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"*No. 103. Frijol colorado ixtapacal.* From Nuevo Progreso, San Marcos."

53892 and 53893. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53892. "*No. 104. Frijol colorado de gancho de suelo,* Chimaltenango."

53893. "*No. 100.* From Quezaltenango."

53894. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 101.* From San Lorenzo, Sacatepequez."

53895. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**

(*P. gratissima* Gaertn. f.)

From Ibarra, Ecuador. Cuttings collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received June 24, 1921.

"(No. 619. Hacienda Carpuela. May 26, 1921. Avocado No. 54.) *Capac.* The parent tree is growing in the huerta rented by Rosa Gonzales, at the Hacienda Carpuela, at an altitude of 5,300 feet. The fruit is a good-sized Mexican avocado about 9 ounces in weight, obovoid in form, purple, and of excellent quality. The seed is relatively small, and the tree is said to be very productive. The variety is worth a trial in California, and in the cooler avocado-growing regions of Florida.

"Formal description: The parent tree is about 45 feet high, slender and erect in habit, with a trunk 18 inches thick at the base, forked 2 feet above the ground. The oval crown is moderately dense and the foliage rich green and healthy in appearance.

"The fruit is oblong pyriform to oval obovoid, weight about 9 ounces, length 4 to 4½ inches, greatest breadth about 2¾ inches; base broadly pointed, the stem inserted slightly to one side; apex rounded to slightly and obliquely flattened; surface of ripe fruit glossy purple black, with very few dots visible; skin less than 0.5 millimeter thick, relatively tough; flesh yellowish cream color, tinged green near the skin, with numerous fiber markings; flavor nutty, rich, and pleasant; quality good; seed rather small, ovate to oval, tight in the cavity with both seed coats adhering closely to the cotyledons. Ripening season mainly from November to March, but a few fruits ripen at other seasons of the year.

"Some specimens do not show any fiber discoloration in the flesh; this is perhaps a question that depends, to a certain extent, upon the degree of maturity which the fruit has reached at the time it is picked."

CORRECTION.

Inventory 64, page 45, third line from bottom, for line that reads—

51036. PLACUS BALSAMIFIER (L.) Bail. Asteraceæ.

substitute as follows:

51037. INULA ROYLEANA DC. Asteraceæ.

INDEX OF COMMON AND SCIENTIFIC NAMES.

Acacia caesia, 53563.
leucophloea, 53564.
Acanthopanax setuenensis, 52928.
Aconite, winter, *Eranthis hyemalis*, 53053, 53145.
Aconitum lycoctonum, 52870, 53081, 53122.
napellus, 53082.
paniculatum, 53083.
septentrionale, 53123.
Acrocomia sclerocarpa, 53487.
Adhatoda vasica. See *Justicia adhatoda*.
Aegilops triticoides. See *Triticum aestivum* × *ovatum*, 53079.
Agropyron sp., 52871.
caninum, 53084.
elongatum, 53085.
obtusiusculum, 53031.
rigidum. See *A. elongatum*.
violaceum, 53124.
Agrostis borealis, 53125.
Aira caespitosa, 52872.
flexuosa, 52873.
Akala, *Rubus macraei*, 53480–53482, 53625, 53759, 53760, 53847.
Albizzia lophantha, 52895.
Aleurites moluccana, 53547.
Alfalfa, *Medicago sativa*, 53448.
Alkanet, rose, *Nonnea rosea*, 52883, 53062, 53107, 53154.
yellow, *Alkanna lutea*, 53032, 53126.
Alkanna lutea, 53032, 53126.
Allium cepa, 52913.
Alopecurus pratensis, 53465.
Alphitonia excelsa, 52896.
Amygdalus persica, 52898.
Annona cherimola, 53594.
Anogeissus latifolia, 53565.
sericea, 53566.
Antirrhinum orontium, 53086, 53127.
Apple, *Malus sylvestris*, 53381–53401.
Laos, *M. laosensis*, 52900.
Paradise, *M. pumila*, 53380.
Tonking, *M. doumeri*, 53008.
Apricot, *Prunus armeniaca*, 52914.
Aquilegia atrata, 53128.
fragrans, 53087.
viridiflora, 53129.
Aralia chinensis glabrescens, 52929.
Araticuy, *Rollinia emarginata*, 53616.
Aristolochia acuminata, 53612.
Arrhenatherum avenaceum. See *A. elatius*.
elatius, 53088.
Aster novi-belgii, 53009–53029.
vimineus, 53030.
Atriplex hortensis, 52893.
Avena barbata wiestii, 53626.
montana, 53130.
nuda, 53131.
sativa, 53624.
sterilis, 53132.
strigosa, 53133.
Avocado, *Persea americana*, 53182–53185, 53895.
Axonopus, sp., 52917.

Balsa, *Ochroma lagopus*, 53262, 53490.
Bamboo, *Dendrocalamus strictus*, 53610.
Banana, *Musa* sp., 53119.
Baptisia australis, 53033.
Barberry, *Berberis* spp., 52874–52877, 52930–52932, 53034, 53035, 53089, 53090, 53177, 53627–53649.
Barley, *Hordeum* spp., 53057, 53102–53105, 53147, 53239.
Bauhinia vahlii, 53567.
variegata, 53568.
Bean, bonavist, *Dolichos lablab*, 53045, 53533, 53859.
common. See *Phaseolus vulgaris*.
Lima. See *Phaseolus lunatus*.
rice, *Phaseolus calcaratus*, 52857.
Scarlet Runner. See *Phaseolus coccineus*.
Berberis spp., 52932, 53648, 53649.
aggregata, 53627.
prattii, 53639.
aristata, 53034, 53628.
atrocarpa, 53629.
chinensis, 52874, 52875, 53630.
crataegina, 53089.
darwinii, 53631.
dictyophylla, 53632.
edgeworthiana, 52930.
francisci-ferdinandi, 52931, 53633.
gagnepaini, 53634.
guimpeli, 52876.
hookeri, 53090, 53635.
integerrima, 52877.
lycium, 53035, 53636.
orthobotrys, 53637.
polyantha, 53638.
quinduensis, 53177.
stapfiana, 53640.
subcaulialata, 53641.
thibetica, 53642.
thunbergii, 53643.
tischleri, 53644.
umbellata, 53645.
veitchii, 53646.
wallichiana. See *B. hookeri*.
wilsonae, 53647.
Betula medwediewi, 52933.
Birch, *Betula medwediewi*, 52933.

Blackberry, *Rubus* sp., 53545.
Bor, *Ziziphus mauritiana*, 52858.
Borago officinalis, 53091.
Boswellia serrata, 53569.
Brachiaria plantaginea, 52918.
Brachypodium sylvaticum, 53134.
Bramble, *Rubus* spp., 52939, 53535–53540.
Brassica pekinensis, 52910.
rugosa, 53542.
Breadnut tree, *Brosimum alicastrum*, 53534.
Bromus adoensis, 53036.
brizaeformis, 53135.
laciniatus, 53037.
racemosus, 53038.
rigidus, 53092.
unioloides, 53557.
Brosimum alicastrum, 53534.

Cajan indicum, 53238, 53856.
Calamagrostis coarctata, 52955.
Calamus sp., 52902.
Canavali sp., 52855.
plagiosperma, 52861.
Capriola spp., 52903, 52904.
Capsicum annuum, 53857.
Carica chrysopetala, 53754.
papaya, 53761.
Caryota sp., 53120.
Casimiroa sp., 53496.
edulis, 53491.
Cassia fistula, 53570, 53613.
laevigata, 53851.
Castor-bean, *Ricinus communis*, 52953, 52954, 53242.
Catalpa bungei, 52909.
Catjang, *Vigna cylindrica*, 53080.
Cerinthe alpina, 53093, 53136.
major, 53039, 53094.
minor, 53095.
Chaulmoogra tree, *Taraktogenos kurzii*, 53844.
false, *Gynocardia odorata*, 53121.
Cherimoya, *Annona cherimola*, 53594.
Cherry, mahaleb, *Prunus mahaleb*, 53415.
Prunus spp., 53416–53426, 53442.
Chick-pea, *Cicer arietinum*, 53858.
Chufa, *Cyperus esculentus*, 52899.
Chuquiraga insignis, 53179.
Cicer arietinum, 53858.
Citrus decumana. See *C. grandis*.
grandis, 53611.
Clematis spp., 53663–53665.
aethusifolia latisecta, 53650.
alpina, 53137.
sibirica, 53138.
flammula, 53139.
fusca, 53651.
glauca akebioides, 53652.
grata, 53653.
grandidentata, 53654.
gravcolens, 53040.
integrifolia, 53140.
intermedia, 53655.
montana rubens, 52934.
Clematis pseudoflammula, 53141, 53656.
recta, 53657.
reticulata, 53041.
spooneri, 53658.
tangutica, 53659.
veitchiana, 53660.
vitalba, 53042, 53661.
viticella, 53043, 53096, 53662.
Clerodendrum infortunatum, 53571.
Clover, cluster, *Trifolium glomeratum*, 53007, 53541.
red, *Trifolium pratense*, 53552–53554.
white, *Trifolium repens*, 53449, 53450.
sweet, *Melilotus alba*, 52916, 53621.
Clusia sp., 53489.
Cochlospermum gossypium. See *Maximilianea gossypium*.
Coconut, *Cocos nucifera*, 53497–53499.
Cocos nucifera, 53497–53499.
Coffea canephora, 53454, 53455.
canephora kouilouensis, 53459.
congensis, 53456.
dewevrei, 53457.
excelsa, 53458.
laurentii, 53461, 53462.
liberica, 53460.
robusta. See *C. laurentii*.
Coffee, *Coffea* spp., 53454–53462.
Columbine, *Aquilegia*, spp., 53087, 53128, 53129.
Colutea media, 52878.
orientalis, 52879.
Comfrey, *Symphytum* spp., 52885, 53109, 53161.
Corchorus olitorius, 52890–52892.
Corn, *Zea mays*, 52911, 53217, 53595–53606.
Coronilla varia, 53607.
Cotoneaster acutifolia, 53666.
acutifolia villosula, 52935.
affinis, 53468, 53667.
bacillaris, 53668.
obtusa, 53669.
amoena, 53670.
apiculata, 53671.
bacillaris. See *C. affinis bacillaris*.
bullata, 53672.
buxifolia, 53673.
dielsiana, 53674.
divaricata, 53675.
franchetii, 53676.
frigida, 53677, 53678.
harroviana, 53679.
hebephylla, 53680.
henryana, 53681.
horizontalis, 53682.
lindleyi, 53683.
lucida, 53684.
melanocarpa laxiflora, 53685.
microphylla, 53686.
thymifolia, 53687.
moupinensis, 53688.
pannosa, 53689.

Cotoneaster racemiflora, 53690.
rotundifolia, 53691, 53692.
salicifolia floccosa, 53693.
rugosa, 53694.
simonsi, 53469, 53695.
Cotton, *Gossypium* spp., 53263–53266, 53492, 53493.
Cowpea, *Vigna sinensis*, 52862, 53813, 53824, 53866.
Crataegus stipulosa, 53755.
Crowfoot, *Ranunculus* spp., 53108, 53158.
Cucumber, *Cucumis sativus*, 52868, 52869, 53267, 53268, 53451.
Cucumis sativus, 52868, 52869, 53267, 53268, 53451.
Currant, garden, *Ribes vulgare*, 53220–53237.
Cyperus esculentus, 52899.

Danthonia setacea, 53115.
Davidia involucrata vilmoriniana, 52936.
Delphinium amoenum, 53097.
cashmerianum, 53098, 53142.
consolida, 53044.
elatum, 53099, 53143.
Dendrocalamus strictus, 53610.
Deutzia corymbosa, 53696.
globosa, 53697.
longifolia veitchii, 53698.
Digitaria exilis, 53486, 53546.
Dioscorea alata, 52906–52908, 52927, 53475.
esculenta, 52905, 53443.
pentaphylla, 52867.
rotundata, 53006.
transversa, 52863.
trifida, 53444, 53495.
Diospyros conzattii, 53176.
discolor, 53555.
tupru, 53572, 53573.
Dolichos lablab, 53045, 53533, 53859.

Echinospermum lappula. See *Lappula myosotis*.
Eleusine coracana, 53622.
Elymus arenarius, 52880, 53046, 53144.
caput-medusae, 53047.
desertorum, 53100.
europaeus, 53048.
giganteus, 53049.
hirsutiglumis, 53050.
sibiricus, 53051.
virginicus submuticus, 53052.
Emmer, *Triticum dicoccum*, 53078.
Eragrostis abyssinica, 53476, 53477.
tremula, 53615.
Eranthis hyemalis, 53053, 53145.
Eriolaena hookeriana, 53574.
Eucalyptus risdoni, 53852.
Eugenia apiculata. See *E. luma*.
luma, 53591.
Euonymus hamiltonianus, 53699.
latifolius, 53700.
Euonymus planipes, 53701.
yedoensis, 53702.
Euphorbia royleana, 53575.

Fagraea auriculata, 53483.
Ferraria welwitschii, 53556.
Festuca bromoides, 53116.
Ficus macrophylla, 52865.
Flacourtia sepiaria, 53576.
Flax, *Linum usitatissimum*, 53860.
Forget-me-not, *Myosotis* spp., 53059, 53060, 53151, 53152.
Fragaria spp., 53853–53855.
Fundi, *Digitaria exilis*, 53486, 53546.

Gardenia latifolia, 53577.
Globeflower, *Trollius europaeus*, 53175.
Gossypium sp., 53492.
barbadense, 53263–53266, 53493.
Granadilla, *Passiflora maliformis*, 53180.
Grass, *Avena barbata wiestii*, 53626.
Axonopus sp., 52917.
beard, *Polypogon monspeliensis*, 53067.
bent, *Agrostis borealis*, 53125.
Brachiaria plantaginea, 52918.
brome, *Bromus* spp., 53036–53038, 53092, 53557.
false, *Brachypodium sylvaticum*, 53134.
Calamagrostis coarctata, 52955.
canary, *Phalaris bulbosa*, 53241.
Capriola spp., 52903, 52904.
Eragrostis tremula, 53615.
feather, *Stipa* spp., 53071, 53072, 53160.
fescue, *Festuca bromoides*, 53116.
foxtail, *Alopecurus pratensis*, 53465.
hair, *Aira* spp., 52872, 52873.
holy, *Torresia odorata*, 52888, 53174.
Johnson, *Holcus halepensis*, 52919.
Koeleria alpicola, 52881.
lyme, *Elymus* spp., 52880, 53046–53052, 53100, 53144.
melic, *Melica* spp., 52882, 53149, 53150.
millet, *Milium effusum*, 53058.
moor, *Sesleria coerulea*, 53159.
oat, downy, *Trisetum spicatum*, 52889.
tall, *Arrhenatherum elatius*, 53088.
Paspalum spp., 52920, 52921.
spear, *Poa* spp., 53064–53066, 53117, 53155–53157.
rooi, *Themeda triandra*, 53118.
Valota insularis, 52922.
wallaby, *Danthonia setacea*, 53115.
wheat, *Agropyron* spp., 52871, 53031, 53084, 53085, 53124.
Gynocardia odorato, 53121.

Helianthus annuus, 53240.

Hellebore. See *Helleborus foetidus.*
Helleborus foetidus, 53054, 53101, 53146.
Hibiscus sp., 52856.
Higacho, *Carica chrysopetala*, 53754.
Hiptage benghalensis, 53578.
madablota. See *H. benghalensis.*
Holarrhena antidysenterica, 53579.
Holcus halepensis, 52919.
sorghum, 53055, 53056, 53558–53562.
Honeysuckle, *Lonicera* spp., 53707–53716.
Honeywort, *Cerinthe* spp., 53039, 53093–53095, 53136.
Hordeum distichon palmella, 53102–53104.
nodosum, 53057.
secalinum. See *H. nodosum.*
spontaneum, 53147.
vulgare pallidum, 53239.
trifurcatum, 53105.
Hydnocarpus spp., 53472, 53473.
wightiana, 52859.
Hydrangea petiolaris, 52937.
Hyoscyamus muticus, 53543.
Hyphaene thebaica, 53848.

Ilex sp., 53452.
Ipomoea sp., 53843.
ficifolia, 53609.
Iris bulleyana, 53703.
clarkei, 53704.
forrestii, 53705.
mellita, 53706.

Juglans sp., 53198.
Justicia adhatoda, 53580.
Jute, nalta, *Corchorus olitorius*, 52890–52892.

Khaya nyasica, 53474.
Koeleria alpicola, 52881.

Lagerstroemia parviflora, 53581, 53582.
Lappula myosotis, 53148.
Larkspur, *Delphinium* spp., 53044, 53097–53099, 53142, 53143.
Laurocerasus ilicifolia, 52923.
Lecythis zabucajo, 53850.
Leucomeris spectabilis, 53583.
Leycesteria formosa, 52864.
Lilium neilgherrense, 52924, 52926.
nepalense, 52925.
Lily, *Lilium* spp., 52924–52926.
Linum usitatissimum, 53860.
Lonicera alpigena, 53707.
deflexicalyx, 53708.
dioica, 53709.
lanceolata, 53710.
longa, 53711.
maackii, 53712.
obovata, 53713.
quinquelocularis translucens, 53714.
ruprechtiana, 53715.
trichosantha, 53716.
Lotus sp., 53447.
uliginosus, 53446.
Love-in-a-mist, *Nigella damascena*, 53061, 53106, 53153.
Luffa aegyptiaca. See *L. cylindrica.*
cylindrica, 52952.
Lumbang, *Aleurites moluccana*, 53547.
Lupine, blue, *Lupinus angustifolius*, 53549.
yellow, *L. luteus*, 53550.
Lupinus angustifolius, 53549.
luteus, 53550.

Mabolo, *Diospyros discolor*, 53555.
Mahogany, African, *Khaya nyasica*, 53474.
Mallotus philippinensis, 53584.
Malus doumeri, 53008.
laosensis, 52900.
pumila, 53380.
sylvestris, 53381–53401.
Maximilianea gossypium, 53585.
Meadow rue, *Thalictrum* spp., 52886, 52887, 53073–53076, 53110–53112, 53162–53173.
Medicago sativa, 53448.
Melica ciliata, 53149.
nutans, 52882, 53150.
Melilotus alba, 52916, 53621.
Milium effusum, 53058.
Millet, pearl. *Pennisetum glaucum*, 53063, 53623.
ragi, *Eleusine coracana*, 53622.
Mock orange, *Philadelphus* spp., 53718–53726.
Monkshood, *Aconitum* spp., 52870, 53081–53083, 53122, 53123.
Morning-glory, *Ipomoea* spp., 53609, 53843.
Musa sp., 53119.
Myosotis arvensis, 53059, 53151.
palustris. See *M. scorpioides.*
scorpioides, 53060.
stricta, 53152.
Myrica rubra, 53453.

Naranjilla, *Solanum quitoense*, 52866.
Nathusia swietenioides, 53586.
Nigella damascena, 53061, 53106, 53153.
Nonnea rosea, 52883, 53062, 53107, 53154.

Oat, *Avena* spp., 53130–53133, 53624.
Ochroma lagopus, 53262, 53490.
Onion, *Allium cepa*, 52913.
Onoseris salicifolia, 53178, 53756.
Orache, *Atriplex hortensis*, 52893.
Ornithopus sativus, 53551.
Oryza sativa, 53861, 53862.
Osteomeles obtusifolia, 53485.

Pai ts'ai, *Brassica pekinensis*, 52910.
Palangi, *Brassica rugosa*, 53542.
Palm, *Caryota* sp., 53120.
doum, *Hyphaene thebaica*, 53848.
macauba, *Acrocomia sclerocarpa*, 53487.
rattan, *Calamus* sp., 52902.
Trachycarpus martianus, 53471.

Papaya, *Carica papaya*, 53761.
Paspalum spp., 52920, 52921.
Passiflora maliformis, 53180.
Pea, garden, *Pisum sativum*, 53863.
Peach, *Amygdalus persica*, 52898.
Pear, *Pyrus communis*, 53428–53441.
Pennisetum glaucum, 53063, 53623.
typhoideum. See *P. glaucum*.
Pepper, *Capsicum annuum*, 53857.
Pernettya mucronata, 53717.
Persea sp., 53243.
americana, 53182–53185, 53895.
gratissima. See *P. americana*.
Persimmon, *Diospyros conzattii*, 53176.
Peucedanum ostruthium, 52860.
Phalaris bulbosa, 53241.
Phaseolus calcaratus, 52857.
coccineus, 53244, 53269–53272, 53500–53511, 53763, 53779, 53788, 53790, 53796–53799, 53801–53803, 53806, 53809–53812, 53818, 53819, 53836, 53841, 53867, 53869–53872, 53879, 53894.
lunatus, 53199–53215, 53273, 53274, 53762, 53780, 53835, 53868, 53891.
vulgaris, 53245–53261, 53275–53377, 53512–53527, 53532, 53764–53778, 53781–53787, 53789, 53791–53795, 53800, 53804, 53805, 53807, 53808, 53814–53817, 53820–53823, 53825–53834, 53837–53840, 53842, 53873–53878, 53880–53890, 53892, 53893.
Philadelphus acuminatus, 53718.
brachybotrys, 53719.
incanus, 53720.
inodorus, 53721.
latifolius, 53722.
satsumi, 53723.
sericanthus, 53724.
speciosissimus, 53725.
wilsonii, 53726.
Phleum pratense, 53466, 53467.
Pigeon-pea, *Cajan indicum*, 53238, 53856.
Pine, *Pinus massoniana*, 53849.
Pinus massoniana, 53849.
Pisum sativum, 53863.
Pleiogynium solandri, 52897.
Plum, *Prunus* sp., 53427.
Poa sp., 53117.
alpina, 53064, 53155.
caesia, 53065, 53156.
chaixii, 53066, 53157.
Polymnia edulis, 52894.
Polypogon monspeliensis, 53067.
Potato. See *Solanum tuberosum*.
Dunnotar Castle, *Solanum tuberosum*, 52901.
wild, *Solanum commersonii*, 53846.
Prune, *Prunus domestica*, 53402–53414.
Prunus spp., 53416–53427, 53442.
armeniaca, 52914.
domestica, 53402–53414.
ilicifolia. See *Laurocerasus ilicifolia*.
mahaleb, 53415.
persica. See *Amygdalus persica*.
Pterocarpus erinaceus, 52912.
Pyracantha gibbsii, 52938.
Pyrus communis, 53428–53441.
laosensis. See *Malus laosensis*.
malus. See *Malus sylvestris*.

Randia uliginosa, 53587.
Ranunculus aconitifolius, 53158.
auricomus, 53108.
Raspberry, *Rubus* spp., 53186, 53218, 53480–53482, 53625, 53759, 53760, 53847.
Rhododendron brachycarpum, 53727.
davidsonianum, 53728.
decorum, 53729.
racemosum, 53730.
Ribes vulgare, 53220–53237.
Rice, *Oryza sativa*, 53861, 53862.
Ricinus communis, 52953, 52954, 53242.
Rollinia emarginata, 53616.
Rosa sp., 53743.
cinnamomea, 53731.
davidii, 53732.
elongata, 53733.
longicuspis, 53734.
mollis, 53735.
omeiensis, 53736, 53737.
pteracantha, 53738.
pendulina. See *R. cinnamomea*.
serafinii, 53739.
sertata, 53740.
sinowilsoni. See *R. longicuspis*.
webbiana, 53741.
woodsii, 53742.
Rose. See *Rosa* spp.
Rubus spp., 53378, 53379, 53545.
adenophorus, 52939.
adenotrichos, 53219.
alleghaniensis, 52940.
biflorus quinqueflorus, 52941, 53535.
chroosepalus, 52942, 53536.
flosculosus, 52943.
giraldianus, 52944.
inopertus, 52945.
lasiostylus, 52946.
dizygos, 52947.
macraci, 53480–53482, 53625, 53759, 53760, 53847.
omeiensis, 53537.
parvifolius, 52948.
phoenicolasius, 52949.
pubescens, 52950.
roseus, 53186, 53218.
thibetanus, 53538.
veitchii, 53539.
xanthocarpus, 52951, 53540.
Rye, *Secale* spp., 52884, 53069.

Saccharum officinarum, 53528–53531.
Sage. See *Salvia* spp.
Salpichroa rhomboidea, 53608.
Salvadora persica, 53845.
Salvia pratensis, 53068.
squalens, 53757.
Sapote, white, *Casimiroa* spp., 53491, 53496.

Sapucaia nut, *Lecythis zabucajo*, 53850.
Schrebera swietenioides. See *Nathusia swietenioides*.
Sclerocarya birrea, 52915.
caffra, 53753.
Secale sp., 52884.
fragile, 53069.
Senecio pimpinellaefolius, 53758.
Senna, bladder. See *Colutea* spp.
Serradella, *Ornithopus sativus*, 53551.
Sesamum orientale, 53864.
Sesleria coerulea, 53159.
Sidalcea malvaeflora, 53070.
Snapdragon. *Antirrhinum orontium*, 53086, 53127.
Solanum commersonii, 53846.
maglia, 53445.
quitoense, 52866.
sp., 53187.
tuberosum, 52901, 53188–53197, 53216, 53463, 53464, 53494, 53617–53620.
Sorghum, *Holcus sorghum*, 53055, 53056, 53558–53562.
Sorghum halepense. See *Holcus halepensis*.
vulgare. See *Holcus sorghum*.
Spelt, *Triticum spelta*, 53114.
Spondias pleiogyna. See *Pleiogynium solandri*.
Sterculia macrophylla, 53484.
urens, 53588.
Stickweed, *Lappula myosotis*, 53148.
Stipa capillata, 53071.
pennata, 53072, 53160.
Strawberry, *Fragaria* spp., 53853–53855.
Styphelia grayana, 53478, 53479.
Sugar cane, *Saccharum officinarum*, 53528–53531.
Sunflower, *Helianthus annuus*, 53240.
Symphytum asperrimum, 53161.
officinale, 52885, 53109.

Tabernaemontana donnell-smithii, 53614.
Tacsonia quitensis, 53181.
Taraktogenos kurzii, 53844.
Teff, *Eragrostis abyssinica*, 53476, 53477.
Terminalia myriocarpa, 53470.
tomentosa, 53589.
Thalictrum angustifolium, 53110, 53162.
aquilegifolium, 53163.
delavayi, 53164.
dipterocarpum, 53111.
fendleri, 53165.
flavum, 53073, 53112, 53166.
flexuosum, 53074, 53075.
foetidum, 53076, 53167.
glaucum, 52886, 53168.
kemense, 53169.
minus, 53170, 53171.
nutans, 52887.
Thalictrum polygamum, 53172.
simplex, 53173.
Themeda triandra, 53118.
Timothy, *Phleum pratense*, 53466, 53467.
Tocte, *Juglans* sp., 53198.
Torresia odorata, 52888, 53174.
Trachycarpus martianus, 53471.
Trifolium glomeratum, 53007, 53541.
pratense, 53552–53554.
repens, 53449, 53450.
Trisetum spicatum, 52889.
Triticum aestivum, 52956–52999, 53548, 53590, 53865.
aestivum × *ovatum*, 53079.
bicorne, 53077, 53113.
dicoccum, 53078.
durum, 53000–53005, 53544.
spelta, 53114.
vulgare. See *T. aestivum*.
Trollius europaeus, 53175.

Vaccinium meyenianum, 53488.
Vallaris heynei, 53592.
Valota insularis, 52922.
Viburnum cotinifolium, 53744.
dilatatum, 53745.
hupehense, 53746.
ichangense, 53747.
lobophyllum, 53748.
ovatifolium, 53749.
rhytidophyllum, 53750.
theiferum, 53751.
veitchii, 53752.
Vigna cylindrica, 53080.
sinensis, 52862, 53813, 53824, 53866.

Walnut, *Juglans* sp., 53198.
Wheat, *Triticum* spp.:
common, *T. aestivum*, 52956–52999, 53548, 53590, 53865.
durum, *T. durum*, 53000–53005, 53544.
hybrid, *T. aestivum* × *ovatum* 53079.
wild, *T. bicorne*, 53077, 53113.
Wineberry, *Rubus phoenicolasius*, 52949.

Yam, Guinea, *Dioscorea rotundata*, 53006.
greater, *Dioscorea alata*, 52906–52908, 52927, 53475.
lesser, *Dioscorea esculenta*, 52905, 53443.
Queensland, *Dioscorea transversa*, 52863.
round, *Dioscorea pentaphylla*, 52867.
Yampi, *Dioscorea trifida*, 53444, 53495.

Zea mays, 52911, 53217, 53595–53606.
Ziziphus jujuba. See *Z. mauritiana*.
mauritiana, 52858.
xylopyrus, 53593.

Issued October, 1923.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1921.

(No. 68; Nos. 53896 to 54425.)

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1923.

ADDITIONAL COPIES

OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT

10 CENTS PER COPY

PURCHASER AGREES NOT TO RESELL OR DISTRIBUTE THIS COPY FOR PROFIT.—PUB. RES. 57, APPROVED MAY 11, 1922

CONTENTS.

	Page.
Introductory statement	1
Inventory	5
Index of common and scientific names	61

ILLUSTRATIONS.

	Page.
PLATE I. The edible bamboo of the eastern Himalayas. (*Dendrocalamus hamiltonii* Nees and Arn., S. P. I. No. 53909)	8
II. One of the handsomest flowering trees of the Tropics (*Spathodea campanulata* Beauv., S. P. I. No. 53983)	8
III. A fruiting branch of the Andean currant. (*Ribes punctatum* Ruiz and Pav., S. P. I. No. 53994)	18
IV. The huantuc, a favorite ornamental plant of the Quichua Indians. (*Datura rosei* Safford, S. P. I. No. 54049)	18

INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1921 (NO. 68; NOS. 53896 TO 54425).

INTRODUCTORY STATEMENT.

Almost every one of the plants described in this inventory opens up a vista of romance to any person who is interested in plants.

We have read these descriptions now for 23 years, and each new inventory brings as we read it new thrills. We want to grow almost every plant and be on hand at its first performance, when it begins to loom up as something of more value to America than a mere curiosity.

If the inventory is read hastily by anyone the effect produced is bewildering, but if the reader will rivet his attention on those plants which particularly strike his fancy he will desire to experiment with some of them. Out of these desires comes the usefulness of these plants to the country. It is beyond the range of human possibility for any one person to test thoroughly very many of these new plants, but if each of our thousands of experimenters makes a home for a few the aggregate of information which will accumulate will be very great indeed.

In singling out for special mention certain of the plants described in this inventory, it should be understood that the writer is merely pointing to those which, from his experience with new foreign plants, strike his fancy and seem to offer more to the experimenter than do others. Among those not mentioned, just as likely as not, are the prize packages of the collection.

The fact that the cost of procuring certain plants is great naturally enhances their value in one's mind. Among those first described here, therefore, as worthy of mention are those collected by our agricultural explorer, Wilson Popenoe, in the back country of Ecuador, more particularly the Chota Valley. Of all the regions visited by him during his years of exploration in Central America and South America, none perhaps has afforded more actual discomfort and danger than this Chota Valley of Ecuador, with its primitive civilization and its malaria-carrying mosquitoes. It is gratifying, therefore, to be able to state that he collected there plant material which to his experienced judgment looks unusually promising. He found a new center of avocado seedlings, which he believes may prove of unusual importance to those who want hardier forms that are as large as fanciers demand. His Tamayo variety

(No. 54270), an 18-ounce avocado with all the earmarks of a hybrid between the hardy Mexican and the true West Indian races, with all that this may mean in the way of increased vigor and hardiness and better fruiting habits, can not fail to attract the notice of those engaged in building up this new industry, avocado production. It is true, others of the collection (Nos. 54270 to 54278) made in this valley may ultimately surpass it in flavor.

A new blackberry (No. 54279); a large-fruited wild blackberry (No. 54280); a wild Andean currant with orange-yellow fruits on racemes 2 inches long, which may make possible a race of currants for the Southern States (No. 53994); as well as the white blackberry (No. 53955), which Mr. Popenoe considers one of the most promising species of Rubus yet collected in South America, should all be given the careful attention which they deserve.

The wild potato (No. 54060) from an altitude of 11,500 feet in the mountains of Ecuador will perhaps be a disappointment to the pathologists, inasmuch as it appears to be attacked by the potato blight, much as the cultivated varieties are, but it may at least help to settle the origin of this disease.

Dr. W. A. Orton's studies of those vegetables which can be eaten by persons affected by diabetes have already attracted wide attention in medical circles, and our search for foreign species which may add to his already large collection has brought in 13 East Indian species (Nos. 53896 to 53908) through the kindness of Mr. Lane, of the Botanic Garden in Calcutta, India. These include potherbs and cucurbits which it is to be hoped may help Doctor Orton to diversify the restricted menu of sufferers from this ailment.

For those who have an experimental corner in their vegetable gardens there are in this inventory several interesting things. The acorn (*Dioscorea latifolia*, No. 53925.), which bears its good-sized tubers in the axils of the leaves; the Southern Rhodesian *Coleus rotundifolius* (No. 54321), tubers of which Mr. Thompson described as an excellent substitute for the white potato; and a remarkable collection (Nos. 54411 to 54424) of the rare type of Japanese vegetables belonging to the mustard family, sent by Doctor Onda, of the Imperial Horticultural Experiment Station at Okitsu, are among the most interesting.

Forage-crop specialists will want to test the drought resistance of Doctor Proschowsky's strain of creeping white clover (*Trifolium repens*, No. 53912) which along the flat meadowlands bordering the River Var is cut five times a year for its hay, and of Pole Evans's two South African grasses (Nos. 53956 and 53957), which form a highly relished part of the forage eaten by the game animals of that great wild stock region; or perhaps they will desire to take the advice of Doctor Trabut and try to hybridize *Trifolium panormitanum* (No. 54032) with *T. alexandrinum*, the great berseem clover of the Nile Valley, which has all but succeeded in America and has made such a success in Italy and Algeria; or to test in the Southern States the native wild grasses (*Aristida* spp., Nos. 54396 to 54399) of Angola, which Mr. Gossweiler, of Loanda, has sent.

Mr. Buck, of the College of Agriculture and Forestry, of Nanking, China, has secured for us seeds in quantity of the forest tree *Catalpa bungei* (No. 53989), to whose excellent qualities Frank N. Meyer

called attention when he sent in the first seeds. Its soft light wood, which is easily split, becomes durable when dry, and is used for furniture and building purposes and for wood carving by the Chinese, has evident adaptation to American conditions, as is proved by the trees which have grown from the seed Mr. Meyer sent, making this species worthy of serious study by foresters.

A large species of timber bamboo which flowers regularly and grows to be 60 feet tall can fail to interest us only if it refuses to grow in our Southern States. We are indebted to Mr. Hole, the forest botanist of Dehra Dun, India, for the seeds of this interesting species, *Dendrocalamus longispathus* (No. 54045).

The attention of cerealists should be called to the remarkable collection of Indo China rice selections (*Oryza sativa*, Nos. 54282 to 54296) which Mr. Carle, of the Genetic Laboratory of Saigon, has sent; among them are four (Nos. 54289 to 54292) of the so-called floating rices, having a different flavor from ordinary rice, which are flooded every year from July to November by the Mekong River and root freely from their upper nodes; also to the soft-shelled variety of Job's-tears (*Coix lacryma-jobi ma-yuen*, No. 54310), which, according to Señor Hernandez, Director of Agriculture of the Philippine Islands, is becoming a valuable crop for tropical agriculturists.

Of new fruit-bearing trees and shrubs the gai yuen tao (*Prunus glandulosa*, No. 54028), of China, has proved itself of value as a dooryard shrub as far north as Rochester, N. Y., where it has fruited repeatedly for Mr. Dunbar, to whom we are indebted for a quantity of seeds; it is attractive when in bloom and its enormous crop of brilliant-red refreshing fruits are the delight of little children. Florida mango growers will be eager for more details about the Pachmarhi mango (*Mangifera indica*, No. 54041), seedlings of which Mr. Bembower reports are considered resistant to frost in Pagara, India. The seedless white sapote (*Casimiroa* sp., No. 54046), which Milo Baker sends from Los Angeles, Calif., and the Costa Rican variety *C. edulis* (No. 54051) with fruits weighing 1½ pounds, secured by Mr. Wercklé, will add two new varieties to the collection of this interesting new subtropical fruit which we are getting together in southern Florida.

For the plant breeders who are interested in creating forms of apples, pears, barberries, or roses, we have assembled, through the courtesy of Professor Sargent, of the Arnold Arboretum, and Mr. Dunbar, assistant superintendent of the Rochester Parks, collections (Nos. 54061 to 54265) of very unusual value. These include a large number of wild species gathered by many years of effort and should find their places in the collections of the universities in the Northern States, where these plants form such important industries.

To those who have found how excellent are some of the new fruits originated by H. R. Wright, of Avondale, New Zealand, the new aphis-resistant apple stocks and other new prune and apple varieties (Nos. 54385 to 54395) will appeal.

To lovers of ornamental plants the gift of Hon. Vicary Gibbs, *Lonicera syringantha* (No. 54058), with its large daphnelike blooms, which have the fragrance of hyacinths, can not fail to appeal, and

it may be a satisfaction to that veteran plant lover of England to feel that he has given to the dooryards of this country so lovely a shrub.

Pole Evans has sent some bulbs of the little South African gladiolus, which has bulbs the size of a pea (*G. alatus*, No. 54304) and ought to be interesting to the breeders of gladioli.

Though the seed failed to grow and it may be another year before we get more of it, we can not refrain from calling the attention of all tropical botanic gardens to the gorgeous ornamental plant, whose meter-long scarlet sprays, composed of the enlarged sepals of the inconspicuous flowers, splashed the landscape with scarlet near the Rio Sucio on Gatun Lake last summer when P. H. Dorsett and the writer were visiting the jungles of the Canal Zone. It is difficult to pardon the botanist Klotzsch for attaching to so gorgeous a plant the almost unpronounceable name of *Warszewiczia coccinea* (No. 54297).

Although the opinion of the chemists seems to preclude the probability that *Stevia rebaudiana* (No. 53918), which at one time alarmed the sugar planters by its reputed sweetness, will ever become a commercial crop, the introduction and trial in our country of so interesting a composite is surely warranted.

The botanical determinations of seeds introduced have been made and the nomenclature determined by H. C. Skeels, and the descriptive and botanical notes have been arranged by G. P. Van Eseltine, who has had general supervision of this inventory. Miss Patty T. Newbold has assisted in the compilation of descriptive notes.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., December 12, 1922.

INVENTORY.[1]

53896 to 53908.

From Sibpur, near Calcutta, India. Seeds presented by G. G. Lane, curator, Royal Botanic Garden, through Lieut. Col. A. T. Gage, director, Botanical Survey of India. Received July 7, 1921.

The following vegetables, requested for experimental work on food for diabetics, are used for food in India according to Watt, Dictionary of the Economic Products of India, from which the notes that follow are adapted.

53896. AMARANTHUS GANGETICUS L. Amaranthaceæ. **Amaranth.**

A small annual, common in Bengal and Assam and now extensively cultivated in many parts of the world as a green vegetable. The leaves and tender stalks are made into a curry by all classes of natives. The young stems are sometimes used as a substitute for asparagus on the English table. (*Vol. 1, p. 212.*)

For previous introduction, see S. P. I. No. 34457.

53897. AMARANTHUS PANICULATUS L. Amaranthaceæ. **Amaranth.**

A heavily fruiting, short-season crop, one of the most important sources of food to the hill tribes of India. Although, no doubt, the young tops are to a certain extent eaten as a vegetable, the small seed is the product for which it is cultivated. (*Vol. 1, p. 211.*)

For previous introduction, see S. P. I. No. 44178.

53898. CHENOPODIUM ALBUM L. Chenopodiaceæ.

A plant common throughout the tropic and temperate Himalayas, ascending to 12 000 feet from Kashmir to Sikkim and to 14,000 feet in Tibet; it is general in the plains of India. This plant is cultivated by the hill tribes on the higher western Himalayas, and the wild plant is also regularly collected and eaten as a potherb and green vegetable. The seed of the cultivated plant is the principal product, but the leaves and twigs are also eaten as a spinach. It is entirely a rain crop, and attains a height of 6 feet. The leaves are rich in mineral matter, particularly potash salts. They likewise contain a considerable quantity of albuminoids and other compounds of nitrogen. The seeds are said to be superior to buckwheat. (*Vol. 2, p. 265.*)

For previous introduction, see S. P. I. No. 51214.

53899 to 53901. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

53899. *Sweet melon.* An herbaceous climber, said to be native to northwestern India, Baluchistan, and west tropical Africa; extensively cultivated for its fruit in the sandy basins of rivers. The fruit is round, green or yellowish, the skin covered with a network of raised brown lines. The fruit is eaten uncooked in a variety of

[1] It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

53896 to 53908—Continued.

ways. The pulp is usually sweetish and pleasant and is eaten by Europeans as well as by natives. A sweet edible oil is obtained from the seeds, and the seeds and fruit pulp are used medicinally. (*Vol. 2, p. 627.*)

53900. Var. *utilissima.* A form cultivated in Bengal, the Northwest Provinces, and the Punjab during the hot weather and the rains. The fruit varies from short oval or cylindric to elongate, 2 to 5 feet long, and is either straight or curved like some varieties of cucumber. It varies in color from dark green to nearly white, usually changing to a bright-orange color when ripe. When young it is much eaten by Europeans in the Northwest Provinces in lieu of cucumbers, being in season long before that vegetable, but not so highly flavored. When little more than half grown they are pickled; when ripe they have much the flavor of the melon, and will keep for several months if carefully gathered and hung up. They are also eaten raw and are much used in curries. A sweet edible oil is obtained from the nutritious seeds, which are also used medicinally. (*Vol. 2, p. 631.*)

53901. Received as *Cucumis momordica.*

53902. LUFFA ACUTANGULA (L.) Roxb. Cucurbitaceæ. **Gourd.**

A climber, native to northwest India, Sikkim, Assam, and eastern Bengal. The fruit is highly esteemed by natives and is eaten in curries or dressed with clarified butter. When half grown it is one of the best indigenous Indian vegetables, peeled, boiled, and dressed with butter, pepper, and salt. When fully developed it is about a foot long, but if allowed to grow longer than 4 inches it rapidly deteriorates in quality. The fruits, seeds, and leaves are used medicinally, and the dried fibrous rind is used as a brush for sizing paper. (*Vol. 5, p. 94.*)

For previous introduction, see S. P. I. No. 51230.

53903. LUFFA CYLINDRICA (L.) Roemer. Cucurbitaceæ. **Gourd.**
(*L. aegyptiaca* Mill.)

A native of India, cultivated or naturalized in most hot countries of the world. In India it is common everywhere and is often cultivated, especially on the plains. The fruit, which is smaller than that of *L. acutangula*, is edible and is similarly used in curries, etc., by the natives. An oil is obtained from the seeds; the seeds are used medicinally; and the dry fruit, which is filled with an interwoven network of fiber, is used as a flesh brush in Turkish baths. (*Vol. 5, p. 96.*)

For previous introduction, see S. P. I. No. 49163.

53904. MIRABILIS JALAPA L. Nyctaginaceæ.

A yellow, purple, or magenta flowered plant cultivated or spontaneous over the greater part of India, being equally plentiful in the hotter valleys of the northwest Himalayas, from the plains up to 7,000 feet, and in the far east in Bengal, Manipur, and Burma. The plant is often so prevalent near village sites as to exclude all other vegetation. The leaves are said to be largely used as a vegetable at Ooson in the Salem District. The powdered root and seeds are used in cosmetics, and the root and leaves are used medicinally. (*Vol. 5, p. 253.*)

For previous introduction, see S. P. I. No. 47589.

53905. OCIMUM TENUIFLORUM L. Menthaceæ.
(*O. sanctum* L.)

A somewhat shrubby herbaceous plant found throughout India, Burma, and Ceylon and distributed in the Malay Archipelago, Australia, western Asia, and Arabia; it is cultivated occasionally as a potherb by Europeans, for which purpose it is very useful. The leaves, seeds, and flowers are used in native medicine. (*Vol. 5, p. 444.*)

53896 to 53908—Continued.

53906. RUMEX MARITIMUS L. Polygonaceæ.

An annual common in marshes in Assam, Bengal, and the plains of northern India. In the Punjab Himalayas it is found in similar localities up to 12,000 feet. It is distributed to Europe, Asia, North Africa, and North and South America. The plant has cooling properties and is often eaten by natives as a potherb especially in the warm weather. The leaves are used medicinally. (*Vol. 6, pt. 1, p. 591.*)

53907. RUMEX VESICARIUS L. Polygonaceæ.

An annual 6 to 12 inches high, native to the western Punjab, the Salt Range, and the Transindus Hills and cultivated throughout India as a vegetable; it is eaten either raw or cooked. It is usually grown in patches near a well and may be procured almost all the year round. The entire plant is used medicinally. (*Vol. 6, pt. 1, p. 592.*)

53908. TRICHOSANTHES ANGUINA L. Cucurbitaceæ.

An annual creeper which probably was originally wild in India or the Indian Archipelago. It is cultivated throughout India as a rainy season crop for its long cucumberlike fruits, which are cooked and eaten as a vegetable, either boiled or in curries. When young it is prettily striped with white and green; when ripe it varies in length from 1 to 3 feet and is of a brilliant orange color. If gathered when very young, less than 4 inches in length, and cut into thin strips, it may be cooked in the same way as French beans and forms a very fair substitute for that vegetable. (*Vol. 6, pt. 4, p. 81.*)

For previous introduction, see S. P. I. No. 51824.

53909. DENDROCALAMUS HAMILTONII Nees and Arn. Poaceæ.

Bamboo.

From Dehra Dun, India. Seeds presented by R. S. Hole, forest botanist, Forest Research Institute and College. Received July 29, 1921.

The common bamboo of the eastern Himalayas with large stems 3 to 6 inches in diameter, rather hollow and not always straight, but used for every variety of purpose. This bamboo grows gregariously on hillsides up to 3,000 feet, and the stems are 40 to 60 feet high. They often grow low and tangled instead of straight; the bamboo may be recognized by this characteristic and by the very thick shoots which grow out at the nodes. The young shoots are eaten. (Adapted from *Gamble, A Manual of Indian Timbers, p. 430.*)

A forest growth of this edible bamboo is shown in Plate I.

For previous introduction see S. P. I. No. 48266.

53910 to 53912.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky, Jardin d'Acclimatation. Received July 19, 1921. Quoted notes by Doctor Proschowsky.

53910. CENTAUREA CANARIENSIS Willd. Asteraceæ.

"A rather large bush which is very drought resistant. When covered with its large purple flowers it is rather ornamental."

Native to the island of Teneriffe, Canary Islands.

53911. CENTAUREA RAGUSINA L. Asteraceæ.

"An exceedingly ornamental bushy Dalmatian plant with yellow flower heads and white silky-tomentose foliage, sometimes nearly 6½ feet across, which grows on almost perpendicular rocks and on walls of masonry where it is planted or naturalized, since it is not wild here."

For previous introduction, see S. P. I. No. 48027.

53910 to 53912—Continued.

53912. TRIFOLIUM REPENS L. Fabaceæ. **White clover.**

"On the very few flat meadowlands along the lowest part of the little river Var the herbaceous growth is cut five times yearly, green fodder being very much in demand in this exceedingly dry climate, so I could not find any ripe seeds on the plants which are found here and there on these little meadows. But with my two sons I started on an excursion and found a few scattered plants on somewhat drier ground, though apparently it does not exist on the sunburnt hillsides. We managed to gather a few seeds more or less ripe. Perhaps you may find, after all, that the plant growing here may be more drought resistant than the ordinary clovers. We have had no rain of any importance since September."

53913 and 53914. TRIFOLIUM spp. Fabaceæ.

From Melbourne, Victoria. Seeds purchased from F. H. Brunning. Received August 2, 1921.

53913. TRIFOLIUM FRAGIFERUM L. **Strawberry clover.**

"*Tarwei* variety." (*Brunning.*)

"A creeping perennial clover of possible value as a forage and lawn plant in the cooler and intermountain regions of the United States." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 29263.

53914. TRIFOLIUM SUBTERRANEUM L. **Subterranean clover.**

"One of the most nutritious plants known to agriculture, indigenous to Britain, found growing on dry, sandy, gravelly soil. The stems grow over each other to a depth of 6 or 7 inches, the lower ones being as healthy as those above." (*Brunning.*)

For previous introduction, see S. P. I. No. 52335.

53915 to 53917.

From Guatemala, Guatemala. Seeds presented by Sr. Ad. Tonduz, Dirección General de Agricultura. Received June 29, 1921. Numbered July, 1921. Quoted notes by Sr. Tonduz.

53915 and 53916. TRITICUM AESTIVUM L. Poaceæ. **Common wheat.** (*T. vulgare* Vill.)

53915. "*No. 107b.* From San Miguel Acatan, Huehuetenango."

53916. "*No. 108. Trigo sipac.* From Patzum, Chimaltenango."

53917. PISUM SATIVUM L. Fabaceæ. **Garden pea.**

"*No. 98.* From San Pedro las Huertas, Sacatepequez."

53918. STEVIA REBAUDIANA Bertoni. Asteraceæ.

From Buenos Aires, Argentina. Plants presented by the director of the Botanic Gardens, Asuncion, Paraguay, through D. S. Bullock, agricultural trade commissioner, United States Department of Agriculture, American Embassy, Buenos Aires. Received July 25, 1921.

"This plant has been the subject of at least two rather detailed researches, as follows: Rasenack, P., Über die Süss-stoffe des Eupatorium rebaudianum und des Süssholzes, in Arbeiten aus dem Kaiserlichen Gesundheitsamte, 28 (1908), 420–443, and Dieterich, Karl, Über die Bestandteile der Paraguay-Süss-stoffpflanze Eupatorium rebaudianum, Kaâ-Heé, und ihre pharmazeutische Verwertbarkeit, in Pharmazeutische Zentralhalle, 50 (1909), 435–440; 458–462.

"The latter reported the presence of two glucosides, rebaudin and eupatorin, whereas Rasenack found only one, which he terms only eupatoriumsüss-stoff. Both investigators were interested in this material as a possible substitute

THE EDIBLE BAMBOO OF THE EASTERN HIMALAYAS. (DENDROCALAMUS HAMILTONII NEES AND ARN., S. P. I. No. 53909.)

Like several other bamboos the young shoots of this species are a delicious vegetable. They suggest gigantic asparagus tips, but are more firm and crisp in texture. For its valuable timber, as well as for its edible shoots, the species is worthy of trial in the southern United States, where the Asiatic bamboos promise to become of economic importance. (Photographed by J. F. Rock, Berjan Forest Reserve, Assam, February, 1921; P22721FS.)

ONE OF THE HANDSOMEST FLOWERING TREES OF THE TROPICS. (SPATHODEA CAMPANULATA BEAUV., S. P. I. No. 53983.)

The Torrid Zone is famous for its flowering trees, some of which are gorgeous in the extreme. Like the royal poinciana, the amherstia, and the browneas, *Spathodea campanulata* bears flaming-red flowers of striking beauty. It succeeds in southern Florida and is highly esteemed in Hawaii. (Photographed by Wilson Popenoe, Cocoanut Grove, Fla., April 15, 1916; P16718FS.)

for licorice, but determined that the active principles were not closely allied to glycyrrhizin. Dieterich reports that the glucosides are present in very small quantities, that their isolation is rather expensive and attended by considerable difficulty, and that the crude preparation comparable to licorice extract is with difficulty soluble and has a very bitter aftertaste. He states also that the plant is a very small one which occurs only in the mountainous regions of Paraguay. For these reasons he is very skeptical as to its potential commercial value, although both he and Rasenack suggest the advisability of cultivation experiments outside of South America." (*E. E. Stanford.*)

For previous introduction, see S. P. I. No. 47515.

53919. Datura suaveolens Humb. and Bonpl. Solanaceæ.

From Buitenzorg, Java. Seeds presented by Dr. P. J. S. Cramer, chief, Plant Breeding Station. Received August 6, 1921.

"A plant native to Minas Geraes and Sao Paulo, Brazil, common in the Antilles, and much cultivated in the Tropics and in conservatories for its very large nodding white flowers. Distinguished from *Datura arborea* and *D. ruizii* by its inflated 5-toothed calyx and its long slender fusiform fruit." (*W. E. Safford.*)

A handsome plant 15 to 20 feet high, with smooth elliptic leaves, downy beneath; sometimes 300 of the very large pure-white sweet-scented pendent flowers are open at once. (Adapted from *Gardeners' Chronicle, 3d scr., vol. 2, p. 593.*)

53920 and 53921.

From Chester, England. Seeds purchased from James Hunter. Received August 5, 1921.

53920. Anthyllis vulneraria L. Fabaceæ. **Kidney vetch.**

A perennial plant found wild over a large part of Europe. It grows naturally along roadsides, wherever the soil is dry and thin and the subsoil calcareous. It was first introduced into cultivation by a German peasant about 40 years ago. (Adapted from *Division of Agrostology Circular 6, p. 7.*)

For previous introduction, see S. P. I. No. 7721.

53921. Sanguisorba minor Scop. Rosaceæ. **Burnet.**
(*Poterium sanguisorba* L.)

The "salad burnet," an exceedingly hardy and long-lived perennial native to France, up to 2 feet high; the young leaves, resembling the cucumber in flavor, are used as a salad. (Adapted from *Robinson, The Vegetable Garden, p. 116.*)

For previous introduction, see S. P. I. No. 29800.

53922. Cocos nucifera L. Phœnicaceæ. **Coconut palm.**

From Buitenzorg, Java. Seeds presented by Dr. W. M. Docters van Leeuwen, director, Botanic Garden. Received August 11, 1921.

Probably the same as S. P. I. No. 52854, but we have as yet no information which permits us to identify it unquestionably with that number.

53923. Polyalthia longifolia (Sonner.) Benth. and Hook. Annonaceæ.

From Honolulu, Hawaii. Plants presented by Dr. H. L. Lyon, in charge, department of botany and forestry, experiment station of the Hawaiian Sugar Planters' Association. Received August 11, 1921.

"An excellent street tree which would grow well in Florida and even farther north, as it occurs as far north as Assam." (*J. F. Rock.*)

53924. Dioscorea esculenta (Lour.) Burkill. Dioscoreaceæ. Lesser yam.

From Barbados, British West Indies. Tubers presented by J. R. Bovell, Director of Agriculture. Received August 1, 1921.

"This *Buck* yam has a delicious flavor, and persons growing yams would be well advised to try to obtain a few tubers when the next planting season comes around." (*Report of Department of Agriculture, Barbados, 1919–20.*)

"This is a white-fleshed yam of excellent quality. The skin is smooth and thin but tough; the variety should be a good shipper. The tubers are cylindrical in shape and rather small." (*R. A. Young.*)

53925. Dioscorea latifolia Benth. Dioscoreaceæ. Acom.

From Buenos Aires, Argentina. Tubers presented by D. S. Bullock, agricultural trade commissioner, United States Department of Agriculture, American Embassy. Received July 28, 1921.

"*Papa de aire en parral* (climbing air potato)." (*Bullock.*)

"A yam which produces its crop of edible tubers along the vine, in the axils of the leaves instead of under ground. According to I. H. Burkill, it is of African origin and is called *acom*. Mr. Burkill states that it is very closely allied to *D. bulbifera*. The vine is round stemmed and the leaves cordate. The variety is not a very strong grower. The tubers are angular, brownish gray in color, thin but tough skinned, and in form resemble the liver of fowl, whence arises the name 'turkey-liver yam' by which the variety is known in some parts of Brazil. The tubers weigh from a fraction of an ounce to as much as a pound each, depending upon age and the conditions of growth; they keep exceedingly well. The quality of the tubers is fair when they are properly prepared for the table. The cooked tubers are rather firm but mealy. Boiled in the skin the yellowish flesh is of unpleasantly strong flavor, but when the tubers are pared, cut into pieces, and bo led, the objectionable quality is removed. The boiled yam is also very good when slightly fried." (*R. A. Young.*)

53926 and 53927.

From Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the Department of Agriculture. Received August, 1920, and numbered July, 1921. Quoted notes by Doctor Shantz.

53926. Crotalaria sp. Fabaceæ.

"(No. 1186. Kisumu, Nyanza, Kenia, British East Africa. July 11. 1920.) A Crotalaria with small clustered pods."

53927. Crotalaria sp. Fabaceæ.

"(No. 1187. Kisumu, Nyanza, Kenia, British East Africa. July 11. 1920. A Crotalaria with large bladder pods and seeds one-eighth to one-fourth of an inch across."

53928. Leptospermum scoparium nicholli (Darr.-Smith) Turrill. Myrtaceæ.

From Richmond, Victoria. Seeds presented by F. H. Baker. Received August 13, 1921.

A red-flowered variety of this very abundant tree or shrub, the beautiful colonial counterpart of the English broom, or gorse, sometimes 30 feet in height. Early voyagers and colonists sometimes used its pungent leaves in place of tea. The whole plant, including leaves, flowers, fruit, and young shoots, is highly aromatic, and the oil which it contains perhaps, in the future, will be put to some useful purpose. The wood is largely used for fences and firewood. The Maoris made use of it for their paddles and spears, and a bunch of the twigs makes an excellent broom. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 272.*)

For previous introduction, see S. P. I. No. 48168.

53929. Couepia sp. Rosaceæ.

From San Jose, Costa Rica. Seeds presented by Mrs. A. L. Zeledón. Received July 20, 1921.

Small South American tree bearing clusters of numerous white or cream-colored flowers. The fruits of a number of species are eaten. (Adapted from *Lindley, A Treasury of Botany, vol. 1, p. 341.*)

53930 to 53939. Soja max (L.) Piper. Fabaceæ. Soy bean.

(*Glycine hispida* Maxim.)

From Harbin, Manchuria, China. Seeds procured by Douglas Jenkins, American consul. Received July 22, 1921.

"A collection of soy beans from the Grace-American International Corporation." (*Jenkins.*)

For experiment by the Office of Forage-Crop Investigations.

53930. *No. 1.*
53931. *No. 2.*
53932. *No. 3.*
53933. *No. 4.*
53934. *No. 5.*
53935. *No. 6.*
53936. *No. 7.*
53937. *No. 8.*
53938. *No. 9.*
53939. *No. 10.*

53940. Lycopersicon esculentum Mill. Solanaceæ. Tomato.

From San Bernardo, Chile. Seeds presented by Sr. Salvador Izquierdo. Received July 22, 1921.

"Seeds of the better varieties cultivated in Santa Ines. I have not observed any diseases in these varieties and they are very hardy and productive." (*Izquierdo.*)

53941 to 53943. Capsicum annuum L. Solanaceæ. Red pepper.

From Valencia, Spain. Seeds purchased through John R. Putnam, American consul. Received July 28, 1921. Quoted notes, except as otherwise noted, by Don Rafael Janini, agronomical engineer, Province of Valencia.

53941. "*Morron.* The variety almost universally employed for the best grades of canned peppers." (*Putnam.*)

"A rather coarse, small-bearing variety, greatly liked for export on account of the pleasing appearance of its large, long, fleshy sweet fruits, which are suitable for preserving and roasting."

53942. "*Largo.* A variety also used in certain cases for canning." (*Putnam.*)

"A red, sweet variety."

53943. "*Pimiento de Bola.* A large sweet variety." (*Putnam.*)

"A fine, sweet variety, greatly liked for preserving."

53944 to 53946.

From Kulara, North Queensland, Australia. Seeds presented by J. A. Hamilton. Received July 28, 1921.

53944. Canna edulis Ker. Cannaceæ. Edible canna.

"A handsome red-flowered canna, 8 to 9 feet high, cultivated in Australia for its rootstocks, which yield the Queensland arrowroot of commerce and are edible and palatable when properly cooked. When boiled for 30 minutes and then mashed they are said to be a good substitute for the potato. The species is also said to outyield the potato two to one. The tops have been used as forage." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 46821.

53944 to 53946—Continued.

53945. RUBUS sp. Rosaceæ. Raspberry.

"A wild ever-bearing raspberry which has an inferior but pleasant flavor." (*Hamilton.*)

53946. ZINZIBER sp. Zinziberaceæ. **Ginger.**

"A wild ginger which likes well-drained gravelly soil with plenty of humus and partial shade." (*Hamilton.*)

53947 and 53948. CHAETOCHLOA ITALICA (L.) Scribn. Poaceæ. (*Setaria italica* Beauv.) **Millet.**

From Tokyo, Japan. Seeds purchased from Dr. T. Watase, The Tokyo Plant, Seed & Implement Co. Received July 28, 1921.

"The most important species of the genus Chaetochloa. It is called millet or, to distinguish it from other kinds of millet, foxtail millet. Millet is an erect annual, 2 to 4 feet tall, with a dense bristly yellow or purple head." (*A. S. Hitchcock.*)

53947. "*Kunitomi Uruchi.*" (*Watase.*)

53948. "*Tamagawa ö nagaho. Mochi.*" (*Watase.*)

53949 and 53950. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Coimbatore, Madras, India. Cuttings presented by T. S. Venkatraman, acting government sugar-cane expert, Agricultural College. Received July 29, 1921.

"Disease-free material of varieties now growing in India, that mature there in 10 months, according to Mr. Padhye, an Indian student at the Louisiana State University, who is very enthusiastic about these canes and thought that they would be valuable here." (*W. G. Taggart, Louisiana Sugar Station.*)

53949. *Manjav.* 53950. *Striped Mauritius.*

53951 to 53954. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

From Buenos Aires, Argentina. Seeds presented by Sr. Tomás Amadeo, director general, Ministro de Agricultura de la Nació. Received July 30, 1921. Quoted notes by Sr. Amadeo.

Seeds of cultivated tomatoes for testing for resistance to leaf-spot and other diseases.

53951. "From the School of Agriculture of Mendoza."

53952. "*Tomate de Genova,* cultivated in the School of Agriculture of Casilda."

53953. "From the experimental plantation of Pureta de Diaz (Salta)."

53954. "From the School of Agriculture of Cordoba."

53955. CITRUS sp. Rutaceæ.

From Ichang, Hupeh, China. Collected by Frank N. Meyer, Agricultural Explorer of the Department of Agriculture. Received February 25, 1918. Numbered July, 1921.

"Looks like a lemon, about 2½ inches through and 3 inches long." (*W. T. Swingle.*)

53956 and 53957.

From Pretoria, Union of South Africa. Seeds presented by Dr. I. B. Pole Evans, Division of Botany. Received July 21, 1921.

53956 and 53957—Continued.

53956. PANICUM MAXIMUM Jacq. Poaceæ. **Guinea grass.**

"*Buffels grass.* An indigenous grass received from northwestern Transvaal which is highly relished by game and domestic animals." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 50081.

53957. UROCHLOA BRACHYURA Stapf. Poaceæ. **Grass.**

"A native of northeastern Transvaal, where the seed was collected. This grass is always the one most sought after by wild game and domestic animals." (*C. V. Piper.*)

53958 to 53977.

From Tokyo, Japan. Seeds presented by Dr. M. Okada, through Dr. A. Hrdlicka, United States National Museum. Received August 5, 1921.

53958. ALLIUM FISTULOSUM L. Liliaceæ. **Welsh onion.**

Negi.

53959. BETA VULGARIS L. Chenopodiaceæ. **Beet.**

Aka tojisha (red variety).

53960. BRASSICA JUNCEA (L.) Cass. Brassicaceæ. **Chinese mustard.**

Takana.

53961. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

Shiro kekkyusai.

53962. BRASSICA sp. Brassicaceæ. **Mustard.**

Santosai (Shantung ts'ai).

53963. BRASSICA sp. Brassicaceæ. **Mustard.**

Aka kabura (red turnip).

53964. BRASSICA sp. Brassicaceæ. **Mustard.**

Midzuna (water rape).

53965. BRASSICA sp. Brassicaceæ. **Mustard.**

Okabura (large turnip).

53966. BRASSICA sp. Brassicaceæ. **Mustard.**

Shogoin kabu (turnip).

53967. CHRYSANTHEMUM CORONARIUM L. Asteraceæ.

Kikuma.

53968. CUCUMIS SATIVUS L. Cucurbitaceæ. **Cucumber.**

Sanmaime fushinashi kiuri.

53969. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

Sandomame.

53970. PISUM ARVENSE L. Fabaceæ. **Field pea.**

Saya endo.

53971 to 53973. RAPHANUS SATIVUS L. Brassicaceæ. **Radish.**

53971. Early nonblooming all-season radish.

53972. *Natsu daikon* (summer radish).

53973. *Nerima onagamariyiri daikon.*

53974. BRASSICA sp. Brassicaceæ. **Mustard.**

Aka daikon (red radish).

53958 to 53977—Continued.

53975 and 53976. RAPHANUS SATIVUS L. Brassicaceæ. **Radish.**

53975. *Shogoin daikon.* 53976. *Miyashige daikon.*

53977. SOLANUM MELONGENA L. Solanaceæ. **Eggplant.**

Sandowara naganasu.

53978. ORYZA SATIVA L. Poaceæ. **Rice.**

From Chefoo, Shantung, China. Seeds presented by A. Sugden, through Lester Maynard, American consul. Received August 5, 1921.

"Glutinous rice which I got about 60 miles inland, which is said to be specially good of its kind." (*Sugden.*)

53979. TRITICUM AESTIVUM L. Poaceæ. **Common wheat.**

(*T. vulgare* Vill.)

From Chefoo, Shantung, China. Presented by A. Sugden. Received August 6, 1921.

"Shantung is a braid-producing place. The braid is made chiefly from wheat straw, and I am sending you a sample of the straw and some seeds of the wheat from which the straw is produced." (*Sugden.*)

53980. COLOCASIA ESCULENTA (L.) Schott. Araceæ. **Taro.**

From Buitenzorg, Java. Tubers presented by Dr. W. M. Docters van Leeuwen, director, Botanic Garden. Received August 8, 1921.

"The variety *Talus Ketan* is softer and esteemed more highly than the ordinary form of taro." (*Dr. J. J. Smith, acting director.*)

"A taro having petioles of an even pale green; blade shaded with lighter and darker green, without petiolar spot. The plant produces slender rhizomes which run on the surface of the ground." (*R. A. Young.*)

For previous introduction, see S. P. I. No. 21263.

53981 and 53982.

From Foochow, Fukien, China. Seeds presented by C. R. Kellogg, Fukien Christian University. Received August 11, 1921.

53981. MEDICAGO LUPULINA L. Fabaceæ.

Yellow trefoil, a native of Europe and Asia, is often called *black medic* from the fact that its seed pods when ripe are black.

In addition to supplying the soil with humus and available nitrogen for the use of succeeding crops, the green plants form an excellent cover for the otherwise bare ground during the winter, thus retarding the gullying action and erosion of the winter rains. When turned under for soil improvement, a marked effect can usually be noted in the yields of the succeeding crops. Yellow trefoil is better adapted for pasturage than for hay, owing to its tendency to lodge, even when grown in a comparatively thick stand. All kinds of stock do well on yellow-trefoil pasture, since it furnishes very nutritious grazing. (Adapted from *note by J. M. Westgate and H. S. Coe.*)

For previous introduction, see S. P. I. No. 31395.

53982. MYRICA RUBRA Sieb. and Zucc. Myricaceæ. **Yang mae.**

"The beautiful dark-purple fruits are the size of crab apples and can be eaten out of hand or made into compotes, pies, sirup, and wine. There is great variation in the habit and productivity of the trees and also in the color, size, and taste of the fruits. The trees are evergreen and thrive best in well-drained rocky terraces. The localities that will best suit them in the United States will probably be the southern sections of the Gulf Coast States and the milder parts of California. Chinese name *yang mae.*" (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 48000.

53983. SPATHODEA CAMPANULATA Beauv. Bignoniaceæ.

From Mayaguez, Porto Rico. Seeds presented by D. W. May, in charge, Agricultural Experiment Station. Received August 13, 1921.

The tropical African *fountain* or *tulip tree*, which is of medium size but occasionally reaches a height of 70 or 80 feet, bears dark-green pinnate leaves and at the ends of the branches large bright orange-red flowers with golden yellow margins. The ground beneath the trees is often thickly covered with the exceedingly striking and handsome flowers. The unopened flowers contain a quantity of water, which gives it the name *fountain tree* in India where it is cultivated as an ornamental shade tree. The whitish fluffy seeds fill a boat-shaped capsule which is 10 to 12 inches long. (Adapted from *Rock, Ornamental Trees of Hawaii, p. 193.*)

For previous introduction, see S. P. I. No. 42373.

A cluster of flowers from this tree is shown in Plate II.

53984. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

From Uitenhage, Cape Province, Union of South Africa. Seeds presented by Hugh Magennis, Doorn Koms Farm, through Fred. J. Pritchard, United States Department of Agriculture. Received August 16, 1921.

Introduced for experimental purposes.

"The wild tomato found growing in the region of Uitenhage, received from Hugh Magennis." (*Pritchard.*)

"Resistant to diseases at Uitenhage; red in color, small, round, about 1 inch in diameter; bears in clusters of 5 to 7; very fruitful, but more seed than flesh; fond of moist situations, rapid growing." (*Magennis.*)

53985. TRIFOLIUM GLOMERATUM L. Fabaceæ. **Cluster clover.**

From Melbourne, Victoria, Australia. Seeds presented by Law, Somner & Co. Received August 16, 1921.

"This clover is useful only because it grows fairly well in sour soils, low in phosphate content, when these soils first come into cultivation and before the other clovers have established themselves." (*W. J. Spafford, Superintendent of Experimental Work.*)

For previous introduction, see S. P. I. No. 53007.

53986. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Helsingfors, Finland. Seeds presented by A. F. Tigerstedt. Received August 17, 1921.

"The timothy seed used in my estate since time immemorial, the same kind that is used everywhere else here in southern Finland." (*Tigerstedt.*)

53987. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

From Aizu-Wakamatu, Japan. Seeds presented by Rev. Christopher Noss. Received August 17, 1921.

"One of the largest seeded soy beans that has yet come into the department. Very similar to the *yachi* variety from Japan." (*W. J. Morse.*)

For previous introduction, see S. P. I. No. 49834.

53988. CLITORIA TERNATEA L. Fabaceæ.

From Brooksville, Fla. Seeds sent in from the Plant Introduction Garden, Brooksville, Fla. Received August 19, 1921.

"A double-flowered form of this interesting semitropical vine. The pea-shaped flowers are produced in the axils of the leaves and are of a beautiful deep-blue color. It is one of the most attractive of the smaller flowering vines." (*Peter Bisset.*)

For previous introduction, see S. P. I. No. 51924.

53989. Catalpa bungei Meyer. Bignoniaceæ.

From Nanking, Kiangsu, China. Seeds presented by J. L. Buck, acting dean, College of Agriculture and Forestry, University of Nanking. Received August 17, 1921.

"Seeds collected in the first Kiangsu Provincial Forest Station, Ming Tomb, Nanking. A tree with white pink-dotted flowers which are edible when cooked. The bark and leaves are used in medicine. The soft, light wood is easily split when newly cut, but durable when thoroughly dried; it is used mostly for building purposes and for making furniture, carts, coffins, window sashes, and for carving. It would probably be valuable for fence posts." (*Buck.*)

53990 to 53995.

From Ecuador. Collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received August 15, 1921. Quoted notes by Mr. Popenoe.

53990. Ananas sativus Schult. f. Bromeliaceæ. **Pineapple.**

"(No. 641. Milagro, near Guayaquil, Ecuador. July 20, 1921.) *Milagro* pineapple. Plants from the Hacienda Valdez, near Milagro, about 35 kilometers from Guayaquil.

"The pineapples of Guayaquil have long been famous in tropical America for their superior quality. They are cultivated commercially in the vicinity of Milagro, whence they are brought to the port in large quantities. A few are sent down the coast to Peru. As far as I can see, the variety is either *Smooth Cayenne* or very close to it; on the chance that it is not identical I am sending these suckers, which should be tested in Hawaii and Porto Rico.

"The plant is vigorous, with smooth leaves reaching up to 3 feet in length. The fruits, which sometimes weigh as much as 8 or 10 pounds but more commonly do not exceed 4 pounds, are oblong to oblong-oval in form, slightly narrower toward the apex than at the base. When ripe they are green on the surface; the flesh is white, very abundantly juicy, of tender, melting texture, and of delicately aromatic, sweet, very agreeable flavor. This is an excellent pineapple for use as a dessert fruit. I am inclined to think that it may prove to have slightly better shipping qualities than the strain of *Smooth Cayenne* which has been grown in Florida."

53991. Fuchsia sp. Onagraceæ.

"(No. 637a. From La Rinconada, Ecuador. June 10, 1921.) Seeds of *Zarcillejo*. A half-climbing wild shrub from the mountains of Carchi Province, where it grows at altitudes of 10,000 to 12,000 feet. It bears handsome scarlet flowers about 2 inches long and should be sufficiently hardy for cultivation in California."

53992. Salvia sagittata Ruiz and Pav. Menthaceæ. **Sage.**

"(No. 636a. Road between Cayambe and Ibarra, Ecuador. May 20, 1921.) Seeds of a handsome blue-flowered salvia from the road in the mountains between Cayambe and Ibarra in northern Ecuador, where it grows abundantly at altitudes of 8,000 to 9,000 feet. The plant is slender and reaches 3 feet in height; the deep-blue flowers, about 1½ inches long, are produced in considerable numbers and make the species worthy of a trial in the United States."

53993. Solanum brevifolium Humb. and Bonpl. Solanaceæ.

"(No. 639a. From La Rinconada, Ecuador. June 5, 1921.) Seeds of a slender, attractive climbing plant from the high páramo near the Hacienda La Rinconada, in the Province of Carchi, where it grows at altitudes of 10,000 to 12,000 feet. Its leaves are small and abundantly produced; the flowers are white, star shaped, half an inch broad, and are followed by roundish, deep orange-colored fruits up to an inch long. The slender stems send out adventitious roots, which enable them to cling with security to tree trunks and large rocks. The species may be useful in California and Florida to cover walls and fences. It is a

53990 to 53995—Continued.

perennial, and while not a large grower, will probably reach a height of 10 feet at least. Since it grows upon the high páramo, it should withstand at least several degrees of frost."

53994. RIBES PUNCTATUM Ruiz and Pav. Grossulariaceæ. **Currant.**

"(No. 638a. Hacienda La Rinconada, Ecuador. June 5, 1921.) Seeds of the wild Andean currant from the Province of Carchi. Altitude about 11,500 feet.

"A shrub reaching a height of 6 feet, with broadly ovate, subcrenate leaves truncate at the base, serrate and sometimes slightly lobed, and about an inch long. The round orange-yellow fruits, rarely more than a quarter of an inch in diameter, are borne on axillary racemes about 2 inches long. They are subacid and not very agreeable in flavor and little used by the inhabitants of the region in which they grow.

"In general appearance, both of plant and fruit, this species is strikingly suggestive of our cultivated currants. It will be of interest in the United States because of its relationship with the latter, and it may perhaps be used in producing a good variety of currant suitable for regions where our present cultivated sorts will not succeed."

A fruiting branch of this Andean currant is shown in Plate III.

53995. RUBUS ADENOTRICHOS Schlecht. Rosaceæ. **Blackberry.**

"(No. 640a. Hacienda La Rinconada, Ecuador. June 10, 1921.) *Mora blanca* (white blackberry), from the Province of Carchi, at an altitude of about 10,500 feet. This species of Rubus is low growing and half shrubby in habit, sending up canes to a height of 6 or 8 feet. The stems are light green and covered with short stiff hairs; the leaves are composed of 5 ovate-acuminate to oblong-acuminate, finely serrate, glabrate leaflets 3 to 4 inches long. The white flowers, about an inch broad, are borne in many-flowered panicles up to a foot long. The fruits are abundantly produced; they are oblong to oval, up to three-quarters of an inch long, and cream white when ripe. The drupelets are small and numerous and closely set together; the seeds are small and give little trouble when the fruit is eaten. The flavor of this excellent berry is sweet and pleasant; the species, in fact, is one of the most interesting and promising of all those which have been collected in South America up to the present time. It should be given a careful trial in the southern and western portions of the United States."

53996. DIOSCOREA TRIFIDA L. f. Dioscoreaceæ. Yampi.

From Porto Rico. Tuber presented by J. A. McCutcheon, Federal Horticultural Board, New York City, who obtained it from the Bean Trading Co. Received September 3, 1921.

"This is apparently a purple-skinned strain of the Jamaica yampi. The single tuber received was about 7 inches long by 3 inches in greatest diameter, and nearly 1½ pounds in weight. The flesh is rather moist when cooked, of good flavor, fine grained, and perfectly white." (*R. A. Young.*)

53997 to 54016. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Passoeroean, Java. Seeds presented by Dr. Ph. van Harreveld, director, Sugar Experiment Station. Received August 6, 1921. Quoted notes by Doctor van Harreveld.

"*POJ* is 'Proefstation, Oost Java' (Experiment Station, East Java), where all the seedlings mentioned originated."

53997 to 54003. "These crossings, types, and their seedlings are tolerant to the mosaic disease."

53997. "*No. 1376 POJ* (crossing of *Chunnee* seedlings) = *213 POJ* × *369 POJ* = (*Black Cheribon* × *Chunnee*) × (*Black Borneo* × *Chunnee*) made at the station in 1906."

53997 to 54016—Continued.

53998. "*No. 1507 POJ* (crossing of *Chunnee* seedlings)=*213 POJ*×*369 POJ*=(*Black Cheribon*×*Chunnee*)×(*Black Borneo*×*Chunnee*) made at the station in 1907."

53999. "*No. 2631 POJ* (direct *Chunnee* seedling)=*Koesoemo*×*Chunnee*, made at the station in 1914."

54000. "*No. 1410 POJ* (direct *Chunnee* seedling)=*Black Cheribon*×*Chunnee*, made at the station in 1907."

54001. "*No. 920 POJ* (direct *Chunnee* seedling)=*Black Cheribon*×*Chunnee*, made at the station in 1905."

54002. "*Chunnee*, British India, imported in 1895."

54003. "*Zwinga*, Florida, imported in 1918."

54004. "*No. 2690 POJ* (cross between *Kassoer*,[2] and *Chunnee* seedlings)=*2366*×*2011*=(*100*×*Kassoer*)×(*213 POJ*×*369 POJ*), obtained in 1916."

54005. "*No. 2655 POJ* (diluted *Kassoer* seedlings)=*2221 POJ*×*EK 28*=(*Cheribon*× *Kassoer*)×*EK 28*. These seedlings are to a slight degree attacked by the yellow-stripe disease, but are of vigorous growth and are planted with good results in the factory fields."

54006. "*Yontanzan*, Formosa, imported in 1915. The adult canes and also the seedlings are tolerant to the mosaic disease."

54007 to 54009. "(Direct crossing with *Kassoer* type) *Black Cheribon* × *Kassoer*, obtained in 1911. Resistant to the yellow-stripe disease, but too slender for cane culture."

54007. "*No. 2182 POJ*."

54008. "*No. 2206 POJ*."

54009. "*No. 2210 POJ*."

54010. "*No. 1499 POJ* (crossing of *Chunnee* seedlings)=*385 POJ*×*181 POJ*=(*100 POJ*×*Chunnee*)×(*Black Cheribon*×*Chunnee*) made at the station in 1907. The adult canes and also the seedlings are tolerant to the mosaic disease."

54011. "*No. 1984 POJ* (crossing of *Chunnee* seedlings)=*213 POJ* ×*369 POJ*=(*Black Cheribon*×*Chunnee*)×(*Black Borneo*×*Chunnee*). Made at the station in 1909. The adult canes and also the seedlings are tolerant to the mosaic disease."

54012 and 54013. (Direct crossing with the *Kassoer* type) *100 POJ* ×*Kassoer*, obtained in 1911. Resistant to the yellow-stripe disease, but too slender for cane culture."

54012. "*No. 2336 POJ*."

54013. "*No. 2366 POJ*."

54014. "*No. 2688 POJ* (crossing between *Kassoer* and *Chunnee* seedlings)=*2366*×*2011*=(*100*×*Kassoer*)×(*213 POJ*×*369 POJ*), obtained in 1916. This type shows immunity to the yellow-stripe disease, but is too slender for cane culture."

54015. "*No. 2367 POJ* (direct crossing with *Kassoer* type)=*100 POJ*×*Kassoer*, obtained in 1911. Resistant to the yellow-stripe disease, but too slender for cane culture."

54016. "*No. 2233 POJ* (direct crossing with the *Kassoer* type)=*Black Cheribon*×*Kassoer*, obtained in 1911. Resistant to the yellow-stripe disease, but too slender for cane culture."

---

[2] "*Kassoer* is a cane found by Doctor Kruger in a wild state on Mount Tjerimai in Java. This type is a spontaneous crossing of the wild *Saccharum spontaneum*; *S. officinarum* seedlings, obtained at our station by crossing the two botanical species, are of the same particular habit. All the types obtained are immune against the yellow-stripe disease. All seedlings got from *S. officinarum* are tolerant to the yellow-stripe disease."

GOVERNMENT BOTANIC GARDENS.
LAL-BAG, BANGALORE.
LIBRARY.

A FRUITING BRANCH OF THE ANDEAN CURRANT. (RIBES PUNCTATUM RUIZ AND PAV., S. P. I. No. 53994.)

This wild currant from the high Andes of Ecuador is not of great economic value, but when crossed with the cultivated currants of northern countries it may yield new forms whose climatic requirements will be different from those of present-day horticultural varieties. The Andean currant bears golden-yellow fruits in great abundance and grows in cool regions subject to heavy rainfall. (Photographed by Wilson Popenoe, Hacienda La Rinconada, Ecuador, June 8, 1921; P18600FS.)

THE HUANTUC, A FAVORITE ORNAMENTAL PLANT OF THE QUICHUA INDIANS. (DATURA ROSEI SAFFORD, S. P. I. No. 54049.)

Since prehistoric days the aboriginal inhabitants of the Andean region have cultivated the Huantuc about their diminutive homes. The flower, which was a great favorite with the Incas, varies in color from rich yellow to deep red, and it sometimes reaches 8 inches in length. The plant grows to 15 or 18 feet in height and blooms profusely during most of the year. It can be cultivated in subtropical regions such as California and Florida. (Photographed by Wilson Popenoe, Hacienda La Rinconada, Ecuador, June 9, 1921; P18603FS.)

54017. ATTALEA COHUNE Mart. Phœnicaceæ. **Cohune palm.**

From Stann Creek, British Honduras. Seeds presented by J. M. Sutton, Washington, D. C., who obtained them from Maxwell Riddle, American Palm Products Co., Ravenna, Ohio. Received August 11, 1921.

The fruit of this palm contains a kernel which yields about 40 per cent of an oil that is said to be superior to coconut oil. The cohune grows in the region between southern Mexico and Colombia and attains its best development in British Honduras, Guatemala, and the Honduras Republic. In the latter country the soil of the forests is rich, marly, and of excellent quality. The trees grow about 5 yards apart and the fruits form enormous bunches which sometimes weigh as much as 165 pounds. The average yield of one tree is 1,000 nuts per annum, though some specimens will produce twice as many. By means of ether rather more than 40 per cent of oil can be extracted from the kernel; the cake contains 2.5 per cent of nitrogen and can be used as cattle food. Cohune oil saponifies easily and furnishes an odorless soap which may prove to be useful in the manufacture of fine soap. When freed from fiber the fruit is 2 to 2½ inches long and about 1½ inches across. The shell is very hard and is about one-fourth of an inch thick, while the kernel is the size of a large nutmeg. Houses are thatched with the leaves of this palm; the leafstalks are woven with osiers and cord into fences and mats; the pith of the central stem can be used instead of cork for mounting insects; cord and hammocks are made from the fibers of the young leaves. The sap makes a refreshing drink. (Adapted from *La Hacienda, vol. 11, pp. 376–379.*)

54018 to 54027. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Passoeroean, Java. Cuttings presented by Dr. Ph. van Harreveld, director, Sugar Experiment Station. Received August 24, 1921. Quoted notes by Doctor van Harreveld.

"Free from yellow-stripe disease and sereh disease."

54018. "*No. 36 POJ.*"
54019. "*No. 100 POJ.*"
54020. "*No. 139 POJ.*"
54021. "*No. 213 POJ.*"
54022. "*No. 228 POJ.*"
54023. "*No. 862 POJ.*"
54024. "*No. 979 POJ.*"
54025. "*No. 1228 POJ.*"
54026. "*No. 2379 POJ.*"
54027. "*Kassoer.*"

54028. PRUNUS GLANDULOSA Thunb. Amygdalaceæ. **Plum.**

From Rochester, N. Y. Seeds presented by John Dunbar, assistant superintendent, Department of Parks. Received August 26, 1921.

"A spreading shrub with many slender twigs, growing to a height of 3 to 5 feet; it flowers early in spring with a multitude of small rosy white flowers, which are followed by an abundance of small fruits of purple-black color and of fresh sour taste. These tiny cherries make excellent preserves. Chinese name, *gai yuen tao* (dwarf diminutive peach)." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 46003.

54029 to 54031. TRITICUM AESTIVUM L. Poaceæ. (*T. vulgare* Vill.) **Common [wheat.**

From Buenos Aires, Argentina. Seeds presented by Sr. Carlos D. Girola, Director Honorario del Museo Agrícola de la Sociedad Rural. Received August 30, 1921. Quoted notes by Sr. Girola.

54029. "*Universal* (*Triticum sativum* L. var. *aristatum* subvar. *universal* Gir.), from Baigorrita in the Province of Buenos Aires."

54030. "*Barleta*, from Médanos in the Province of Buenos Aires."

54031. "*Favorito* (*Triticum sativum* L. var. *muticum* subvar. *favorito* Gir.), from Baigorrita in the Province of Buenos Aires."

54032. Trifolium panormitanum Presl. Fabaceæ.

Sicilian clover.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received July 14, 1921.

"A fine winter forage plant of our humid prairies; it will be interesting to carry on crosses with *Trifolium alexandrinum* or berseem. This Trifolium is a relative of berseem and resembles it very much. I believe it to be a plant capable of domestication by selection and cultivation." (*Trabut.*)

For previous introduction, see S. P. I. No. 47597.

54033. Ormosia hosiei Hemsl. and Wils. Fabaceæ.

From Chungking, Szechwan, China. Seeds presented by P. R. Josselyn, American consul. Received August 12, 1921.

"The seeds were secured through the kindness of friends in Chengtu." (*Josselyn.*)

"For high-grade cabinetwork, picture frames, and the very best furniture the timber most highly esteemed in Szechwan is the '*hung-tou mu*,' derived from *Ormosia hosiei*, a tree allied to the Sophora. In the spring *O. hosiei* produces large panicles of white and pink pea-shaped flowers, and at all seasons of the year it is a striking tree. The wood is heavier than water, of a rich-red color, and beautifully marked. It is the most high priced of all local timbers and is now very scarce. In north-central Szechwan it is still fairly common, but on the Chengtu plain it is found only in temple grounds or over shrines. The native name signifies 'red-bean tree' the seeds being red and contained in beanlike pods." (*Wilson, A Naturalist in Western China, vol. 2, p. 21.*)

54034. Passiflora macrocarpa Masters. Passifloraceæ.

From Santiago de las Vegas, Cuba. Seeds presented by Dr. Mario Calvino, director, Estación Experimental Agronómica. Received September 1, 1921.

A Brazilian plant with a habit of growth almost like that of *Passiflora quadrangularis*, from which it differs in its rounded leaves, 5 to 6 inches long, heart-shaped at the base and short acuminate at the tip, stipules up to 2 inches long, and leafy bracts 1½ inches wide and an inch long. The short, fleshy flower tube bears violet petals.

The broad, even, dark-violet coronal filaments are red spotted, the large 3-lobed stigma is yellowish, and the styles white. The fruit is 8 to 9 inches long and 5 to 6 inches in diameter, the largest fruit of all Passifloras. (Adapted from *Martius, Flora Brasiliensis, vol. 13, pt. 1, p. 597.*)

54035. Passiflora ligularis Juss. Passifloraceæ.

From Guayaquil, Ecuador. Seed collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received July 2, 1921.

"A species of Passiflora cultivated in the highlands of Guatemala, up to altitudes of 5,000 feet or more. The fruit is the size of a hen's egg, orange-yellow when fully ripe, with a thick brittle shell inclosing a large number of small thin seeds surrounded by white gelatinous pulp. The flavor is delicate, aromatic, almost perfumed; certainly more delicate and agreeable than most of the other Passifloras which produce edible fruits." (*Wilson Popenoe.*)

54036 and 54037. Cassia spp. Cæsalpiniaceæ.

From Bogota, Colombia. Seeds presented by Hermano Apollinaire-Marie, Institute de la Salle. Received September 1, 1921.

54036. Cassia tomentosa L. f.

"A beautiful ornamental tree of our savannas. It will grow in any region where *Eucalyptus globulus* thrives." (*Apollinaire-Marie.*)

54036 and 54037—Continued.

A shrub or small tree, 10 to 12 feet high, with oval-oblong leaves white tomentose beneath, and deep-yellow flowers.

For previous introduction, see S. P. I. No. 48595.

54037. CASSIA sp.

"A plant of very graceful habit, which will thrive well in regions suited to the cultivation of Eucalyptus." (*Apollinaire-Marie.*)

54038. IPOMOEA FICIFOLIA Lindl. Convolvulaceæ. **Morning-glory.**

From Buenos Aires, Argentina. Seeds presented by Sr. Benito Carrasco, director, Jardin Botanico. Received September 7, 1921.

"A climber bearing abundant clusters of large, handsome mauve-pink funnel-shaped flowers which hang in festoons from the trees and shrubs of Natal and Brazil. It is cultivated in Europe." (*Wood, Natal Plants, vol. 6, pl. 525.*)

For previous introduction, see S. P. I. No. 53609.

54039 and 54040. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. **Oil palm.**

From Belgian Congo. Seeds presented by R. Kinds, director, First Section, Eighth Division, Ministère des Colonies. Received September 7, 1921.

54039. "Var. *Bundi* which is a round fruit with a very large kernel, very hard shell, and not very thick sarcocarp." (*Kinds.*)

For previous introduction, see S. P. I. No. 51021.

54040. "Var. *N'Sombo* with elongated fruit, medium kernel, and a sarcocarp very thick and very rich in oil. It is the best variety of the lower Congo and one of those most sought after for plantations." (*Kinds.*)

For previous introduction, see S. P. I. No. 51016.

54041. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

From Pachmarhi, Central Provinces, India. Seeds presented by the superintendent, Government Gardens, through William Bembower, Allahabad Agricultural Institute, Allahabad. Received September 16, 1921.

"Seeds of *Pachmarhi*, frost-resistant variety." (*Bembower.*)

"The Bombay mango grafts were seriously affected by frost each year when grown at Pagara. The 'khuds' and ravines of the Pachmarhi Hills are full of wild mangos, and it has now been found that if the Bombay varieties are grafted on the wild *Pachmarhi* seedlings, the resulting trees, without deteriorating in quality, are quite frost resistant, a fact which is worth noting by many growers in the Central Provinces who are troubled by the annual destruction caused by frost." (*Agricultural and Cooperative Gazette, Nagpur, vol. 9, p. 15.*)

54042. HIPPEASTRUM RUTILUM (Edwards) Herb. Amaryllidaceæ.

From Berlin, Germany. Bulbs presented by Wilhelm Sturz. Received July 5, 1921.

"A good window plant, flowering easily every year in living rooms, often with two scapes of four or more light vermilion-colored flowers each. There are about 50 bulbs of hazelnut size (the mother plant had about 100). These bulbs are extremely self-willed and ought not to be coaxed by great warmth; they start when they choose. Sometimes a bulb of pea size will work up through 3 inches of heavy soil, and again 120 to 130 fair-sized bulbs, like those I send, will remain dormant for one or two years under the mother plant. Thus it happened that they have been inadvertently scattered all over a place, coming up everywhere to the surprise of the gardener." (*Sturz.*)

54043. CARISSA CARANDAS L. Apocynaceæ. **Karanda.**

From Poona, Bombay, India. Seeds presented by William Burns, economic botanist to the Government of Bombay. Received July 9, 1921.

A large spiny evergreen shrub with light-gray scaly bark, elliptic leathery shining leaves 1½ to 3 inches long, and clusters of white funnel-shaped flowers half an inch long. The ellipsoid purplish black edible fruits, which are eaten out of hand and are also made into an excellent jelly for tarts, are largely sold in the native markets in the Konkan, Deccan, and in Kanara, India. (Adapted from *Cooke, Flora of Bombay, vol. 2, p. 124.*)

For previous introduction, see S. P. I. No. 51005.

54044. THEMEDA TRIANDRA *Forsk.* Poaceæ. **Kangaroo grass.**
(*T. forskallii* Hack.)

From Hobart, Tasmania. Seeds presented by F. R. Evans, Director of Agriculture, Agricultural and Stock Department. Received July 27, 1921.

One of the most useful fodder grasses of the veldt as well as one of the commonest. It is a good hay grass and relished by stock, but should be cut before the seed heads turn brown. In the condition in which it is usually cut for hay in March it has but little feeding value. (Adapted from *Kew Bulletin of Miscellaneous Information, 1911, p. 159.*)

54045. DENDROCALAMUS LONGISPATHUS Kurz. Poaceæ. **Bamboo.**

From Dehra Dun, India. Seeds presented by R. S. Hole, forest botanist, Forest Research Institute and College. Received July 29, 1921.

A tufted bamboo which flowers frequently, with culms 60 feet high, glaucous or nearly white when young, the internodes 18 to 30 inches long, 3 to 5 inches in diameter, and with walls one-third of an inch thick. The stem sheaths are densely clothed with dark stinging hairs. The oblong to linear-lanceolate leaves are rough and almost white beneath, and the panicles are large and leafy. Native to Silhet, Chittagong, Arracan, and Burma. (Adapted from *Brandis, Indian Trees, p. 677,* and *Hooker, Flora of British India, vol. 7, p. 407.*)

54046. CASIMIROA sp. Rutaceæ. **White sapote.**

From Los Angeles, Calif. Cuttings presented by Milo Baker. Received July 16, 1921.

"Budwood from a tree grown from a cutting received from Central America some years ago and budded into a white-sapote tree. The fruit is practically seedless and about the size of a small apple; the entire fruit is edible and very rich. The tree seems to be a vigorous grower and a prolific fruiter." (*Baker.*)

54047. DIOSPYROS LYCOPERSICON Carr. Diospyraceæ.

From Paris, France. Seeds presented by Dr. D. Bois, Paris Museum of Natural History. Received July 13, 1921.

"The species name, *lycopersicon*, refers to the appearance of the fruits, which exactly resemble those of the common tomato (*Solanum lycopersicon*). It is a remarkable species, not only very ornamental but also valuable for the excellent quality of the fruits, which are the largest and most beautiful known to us. It is originally from Japan, whence, it appears, scions were brought by a physician who sent them to his friend, M. Geny, then director of the Jardin de Nice, who grafted them in his garden at Saint Roch." (*Revue Horticole, vol. 50, p. 470.*)

We believe that this is merely a form of *Diospyros kaki*, but it needs to be grown before a definite decision can be made.

54048. DIOSCOREA BATATAS Decaisne. Dioscoreaceæ. **Yam.**

From Hereford, England. Tubers presented by Dr. H. E. Durham, "Dunelm." Received July 23, 1921.

Chappellier. The tubers are club shaped, tapering to a finger size at the upper part, and when grown in the open are generally about 9 to 10 inches long and weigh 12 to 14 ounces when fully grown. Occasionally twin tubers develop on a single plant, but they are then of medium size. This yam may be multiplied either by means of cuttings of the tuber or by means of bulbils. The size of the eventual tuber seems to depend a good deal on the size of the piece from which the plant was grown. By far the most important mode of multiplication is by bulbils. (Adapted from *The Hardy Yams*, by *Dr. H. E. Durham*, in *The Gardeners' Chronicle, 3d ser., vol. 69, p. 18.*)

"The stem of the vine is roundish; the leaf blade is heart-shaped, smooth, upper surface shining, with reddish purple at base of blade." (*R. A. Young.*)

54049. Datura rosei Safford. Solanaceæ.

From Ibarra, Ecuador. Seeds collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received July 21, 1921.

"(No. 625a. Hacienda La Rinconada, Ecuador. June 13, 1921.) *Huantuc.* A yellow-flowered form of the common arborescent Datura which is cultivated about the huts of the Indians all through the Ecuadorian highlands. The plant sometimes grows to 15 or 18 feet; its tubular flowers are about 6 inches long, 2 inches broad at the mouth, and of a rich deep-yellow color. The plant is worthy of trial as an ornamental in protected situations throughout southern California and in southern Florida." (*Popenoe.*)

A cluster of the tubular flowers and a fruit of this arborescent Datura are shown in Plate IV.

54050 to 54053.

From San Jose, Costa Rica. Seeds presented by Carlos Wercklé. Received July 16, 1921. Quoted notes by Mr. Wercklé except as otherwise stated.

54050. Couepia floccosa Fritsch. Rosaceæ.

"*Olosapo, sapotilla de olor.*"

A stout-branched, hoary Guatemalan plant with elliptic to obtuse leaves 1 to 4 inches long, cobwebby above when young, and white tomentose beneath. The small flowers in short reddish tomentose panicles are followed by villose fruits. (Adapted from *Fritsch, Beitrage zur Kenntniss der Chrysobalanaceen, II.* In *Annalen des K. K. Naturhistorischen Hofmuseums, vol. 5, p. 12.*)

54051. Casimiroa edulis La Llave. Rutaceæ. **White sapote.**

"The largest variety that I know; the fruit is very good and weighs from 1 to 1½ pounds."

"A medium-sized erect or spreading tree, having palmately compound leaves, small inconspicuous flowers, and yellowish green fruits the size of an orange. The fruits have a thin membranous skin, yellowish flesh of soft melting texture and sweet or slightly bitter flavor, and one to five large oval or elliptic seeds.

"In its native region the white sapote is a fruit of the highlands. Throughout Mexico and Guatemala it is found at altitudes of 2,000 to 3,000 feet, and occasionally as high as 9,000 feet. It is not grown in regions subject to heavy rainfall." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 47565.

54052. Rheedia edulis (Seem.) Planch. and Triana. Clusiaceæ.

"A handsome pyramidal tree 20 to 25 feet high with deep-green glossy oblong-lanceolate leaves 4 to 6 inches long. The elliptic bright orange-yellow fruits 2 inches long and 1½ inches in diameter have thick terebinthinous skin which separates easily from the snowy white, juicy, melting pulp. The flavor is acid unless the fruit is almost overripe, and strongly resembles that of *Lansium domesticum.* The one to three seeds are about an inch long and adhere closely to the pulp; when cut

54050 to 54053—Continued.

a yellow gamboge oozes out of them. Natives are very fond of this fruit, but the Americans in Brazil do not care for it. It is said to make a superior *doce*, or preserve." (*P. H. Dorsett.*)

For previous introduction, see S. P. I. No. 37384.

54053. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"A native wild bean of the *lunatus* type."

54054 to 54057. DIOSCOREA spp. Dioscoreaceæ.

From Port of Spain, Trinidad. Tubers presented by C. Connell, Montrose, Arima, Trinidad, through F. W. Urich, entomologist, Department of Agriculture, St. Clair Experiment Station. Received July 19, 1921. Quoted notes by Mr. Urich except as otherwise noted.

54054. DIOSCOREA LATIFOLIA Benth. **Acom.**

"*St. Vincent.* The yam bears external tubers on the vine. Cook like the ordinary potato, and in planting treat in the same way as the potato."

"A yam which bears medium-sized, angular edible aerial tubers having yellowish flesh of fair quality. The vine is round stemmed and the leaf is cordate with a broad sinus and abruptly long-acuminate. I. H. Burkill, of the Singapore Botanic Garden, states that this species is native to Africa, where it is called *acom*. The variety is apparently identical with the *caissara*, or 'turkey-liver' yam, of Brazil, the 'Carib potato' of Nicaragua, and the 'climbing air-potato' of Argentina." (*R. A. Young.*)

54055. DIOSCOREA ESCULENTA (Lour.) Burkill. **Lesser yam.**

"*Chinese.*"

"A yam with small, somewhat cylindrical tubers with a smooth tough skin and white flesh of excellent quality. The vine is round stemmed and bears a few short spines. The leaf is cordate with a narrow sinus." (*R. A. Young.*)

54056. DIOSCOREA TRIFIDA L. **Yampi.**

"*Couche Couche.* Grows well in sandy soil."

"Var. *Trinidad yampi*, or *cush-cush*. A small-tubered yam with pink skin and flesh which is usually white and somewhat sweet. The quality is very good. The stem of the vine is two winged, and the leaf is three lobed." (*R. A. Young.*)

For previous introduction, see S. P. I. No. 45992.

54057. DIOSCOREA ALATA L. **Greater yam.**

"*Coconut.*"

"A white-fleshed yam of fair size and good quality." (*R. A. Young.*)

For previous introduction, see S. P. I. No. 49825.

54058. LONICERA SYRINGANTHA Maxim. Caprifoliaceæ. **Honeysuckle.**

From Elstree, Herts, England. Seeds presented by Hon. Vicary Gibbs. Received July 26, 1921.

"Possibly the most beautiful of the bush honeysuckles; a low spreading bush from 2 to 4 feet high, with bluish green leaves and large pink Daphnelike blossoms one-fourth of an inch across of firm waxy texture and a fragrance strongly reminiscent of *Daphne cneorum*, also of hyacinths, but more powerful and delicious." (*The Garden, vol. 85, p. 225.*)

54059. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Lumbatan, Lanao, Mindanao, Philippine Islands. Tubers presented by G. O. Risinger, supervising teacher, Camp Keithley, through P. J. Wester, director, Lanao Experiment Station, Lanao, Bataan. Received July 7, 1921.

"Our smallest Irish potatoes, grown at the Lumbatan Agricultural School, Lanao, at an altitude of 2,500 feet." (*Risinger.*)

54060. SOLANUM sp. Solanaceæ. **Potato.**

From Ibarra, Ecuador. Tubers collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received July 21, 1921.

"(No. 620. Hacienda La Rinconada, in the Province of Carchi. June 9, 1921.) A true wild potato, growing at an altitude of 11,500 feet. It grows abundantly in certain places, preferring the protection of shrubby vegetation along ravines on the páramo. The tubers are rarely more than an inch long by half an inch in thickness, and they are whitish brown with white flesh. They are not used by the inhabitants of this region. The plants appear to be attacked by late-blight, as are cultivated potatoes in the same region." (*Popenoe.*)

54061 to 54163.

From Arnold Arboretum, Jamaica Plain, Mass. Seeds collected by H. C. Skeels, of the Office of Foreign Seed and Plant Introduction, for use in breeding experiments by experts of the Department of Agriculture. Numbered September, 1921. Quoted notes by Mr. Skeels.

54061 to 54074. BERBERIS spp. Berberidaceæ. **Barberry.**

54061. BERBERIS AGGREGATA C. Schneid.

"(Arboretum No. 6861; Wilson No. 1050.) A Chinese shrub 3 to 5 feet high, which has yellowish brown spines, small oblong leaves, yellow flowers in dense racemes, and salmon-red fruits."

For previous introduction, see S. P. I. No. 43817.

54062. BERBERIS AMURENSIS Rupr.

"This northern Chinese and Manchurian shrub, often 8 feet high, has gray branches, slightly reticulated oblong leaves 1 to 3 inches long, and racemes of 8 to 12 ovoid scarlet berries."

For previous introduction, see S. P. I. No. 49052.

54063. BERBERIS AMURENSIS JAPONICA (Regel) Rehder.

"A stout compact shrub native to Japan, with leaves obovate and more leathery than in *B. amurensis*. The scarlet berries have a slight bloom."

For previous introduction, see S. P. I. No. 49053.

54064. BERBERIS BRACHYPODA Maxim.

"(Arboretum No. 7175; Wilson No. 554a.) A shrub from western China 4 to 7 feet high, with ovate serrate leaves, long slender panicles of yellow flowers, and scarlet fruits often half an inch in diameter."

For previous introduction, see S. P. I. No. 43818.

54065. BERBERIS DICTYOPHYLLA Franch.

"A native of Yunnan, China, this barberry is a medium-sized shrub, often broader than high, with small ovate leaves in clusters, pale-yellow flowers, and ovoid red fruits."

For previous introduction, see S. P. I. No. 49056.

54061 to 54163—Continued.

54066. BERBERIS DIELSIANA Fedde.

"(Purdom No. 605a.) A spreading, loosely branched Chinese shrub often 10 feet high, with elliptic leaves that are whitish beneath. The beauty of the red fruits is accentuated by the bronzy color of the leaves in the fall."

For previous introduction, see S. P. I. No. 49057.

54067. BERBERIS GILGIANA Fedde.

"(Arboretum No. 7283; Purdom No. 589.) A native of central China, this ashy barked shrub has somewhat coriaceous lanceolate leaves and dense racemes of yellow flowers."

For previous introduction, see S. P. I. No. 49058.

54068. BERBERIS HENRYANA C. Schneid.

"A Chinese shrub resembling the common barberry, *B. vulgaris*, but having purplish or brown branches. It is about 8 feet high with membranous elliptical leaves pale beneath, and racemes of 10 to 20 yellow flowers followed by red fruits."

For previous introduction, see S. P. I. No. 49059.

54069. BERBERIS KOREANA Palibin.

"A Korean shrub often 6 feet high, with obovate leaves 2 to 3 inches long, dense lax racemes of yellow flowers, and round scarlet fruits."

For previous introduction, see S. P. I. No. 49061.

54070. BERBERIS LUCIDA Schrad.

"This shrub of unknown origin has lustrous dark-green oblong leaves and spreading red-berried racemes about 2 inches long."

For previous introduction, see S. P. I. No. 49062.

54071. BERBERIS SEROTINA Lange.

"A shrub of unknown origin with oblanceolate, entire light-green leaves and short dense racemes of yellow flowers and purplish fruits."

For previous introduction, see S. P. I. No. 49064.

54072. BERBERIS SIEBOLDII Miquel.

"A Japanese shrub about 3 feet high, with reddish brown branches and obovate leaves, 1 to 2 inches long, which turn deep red in the fall. The yellow flowers in small racemes are followed by bright-red fruits one-fourth of an inch long."

For previous introduction, see S. P. I. No. 13353.

54073. BERBERIS THUNBERGII MAXIMOWICZII Regel.

"A Japanese barberry which is larger than the ordinary form and has more arching branches, while the leaves are green beneath. It has the same autumn color of the leaves as the common form and larger flowers and fruits."

For previous introduction, see S. P. I. No. 49065.

54074. BERBERIS VERNAE C. Schneid.

"(Arboretum No. 7176; Wilson No. 4022.)"

A low Chinese shrub native to Kansu Province, about 4 feet high, with spatulate leaves in small fascicles and small yellow flowers followed by red globose fruits one-fourth of an inch in diameter. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 372.*)

54061 to 54163—Continued.

54075. COTONEASTER DIELSIANA E. Pritz. Malaceæ.

"(Arboretum No. 6100–2; Wilson No. 466.) A western Chinese shrub 6 feet high, with slender arching branches, firm oval leaves yellowish gray beneath, and pinkish flowers in small clusters followed by red fruits one-fourth of an inch in diameter."

For previous introduction, see S. P. I. No. 43990.

54076. COTONEASTER FOVEOLATA Rehd. and Wils. Malaceæ.

"(Arboretum No. 6589; Wilson No. 156.) A shrub from Hupeh Province, China, often 10 feet high, with spreading branches. The elliptical leaves are 2 to 3 inches long and turn bright scarlet in autumn. The small clusters of pink flowers are followed by black subglobose fruits about one-third of an inch in diameter."

For previous introduction, see S. P. I. No. 45728.

54077 to 54081. CRATAEGUS spp. Malaceæ. **Hawthorn.**

54077. CRATAEGUS ARKANSANA Sarg.

"(Arboretum No. 4177.)"

A tree native to Arkansas, 20 feet high, with oblong-ovate leaves which turn bright yellow in the fall. The white flowers, 1 inch across, are borne in many-flowered corymbs, and the bright-crimson fruits persist on the branches late in the season. (Adapted from *Sargent, Trees of North America, p. 425.*)

54078. × CRATAEGUS LAVALLEI Herincq.

"(Arboretum No. 2769.) A tree of garden origin with pure-white flowers an inch across, pink stamens, and red fruits an inch in diameter, well displayed by the rich brown leaves in autumn."

For previous introduction, see S. P. I. No. 49071.

54079. CRATAEGUS DAWSONIANA Sarg.

"(Arboretum No. 4428.) A small tree native to Illinois, with yellow-green ovate leaves and orange-red, yellow-fleshed, obovate fruits borne on long slender pedicels."

For previous introductions, see S. P. I. No. 49072.

54080. CRATAEGUS NITIDA (Engelm.) Sarg.

"(Arboretum No. 4123.) An Illinois tree often 30 feet tall, with coarsely serrate lanceolate leaves, white flowers with yellow stamens, and drooping clusters of red fruits on slender stems."

For previous introduction, see S. P. I. No. 49073.

54081. CRATAEGUS PRUNIFOLIA (Marsh.) Baumg.

"(Arboretum No. 4116–5.) A shrub or small tree with obovate serrate leaves, corymbs of white flowers with pink stamens, and red fruits. It is probably of garden origin."

54082 to 54094. MALUS spp. Malaceæ. **Crab apple.**

54082. × MALUS ARNOLDIANA Rehder.

"A hybrid of *M. floribunda* which originated in the Arboretum. The large pink flowers on long stems and the yellow fruits make this tree attractive all through the season."

For previous introduction, see S. P. I. No. 46698.

54083. MALUS BACCATA JACKII Rehder.

"(Arboretum No. 7348.)"

A handsome tree native to Korea, with pure-white flowers 1½ inches across, large dark-green leaves glaucescent beneath, and dark-red fruits nearly an inch thick. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 291.*)

54061 to 54163—Continued.

54084. MALUS IOENSIS (Wood) Britton.

"(Arboretum No. 4683.) This wild crab apple, native to the Mississippi Valley, is a tree often 30 feet high, with ovate serrate leaves 3 to 4 inches long which turn yellow in the fall. The rose-colored flowers, 1 to 2 inches across, are borne in small clusters and are followed by fragrant greenish yellow fruits sometimes 2 inches in diameter."

54085. MALUS MICROMALUS Makino.

"(Arboretum No. 3202–3.) A small tree possibly of hybrid origin, with erect branches forming a pyramidal head. It bears a profusion of bright-red flowers and holds its small fruits well into the winter."

For previous introduction, see S. P. I. No. 49082.

54086. MALUS PRUNIFOLIA RINKI (Koidz.) Rehder.

"A small tree native to China, with obovate leaves, pink or pinkish white flowers, and yellow edible apples often 2 inches in diameter."

For previous introduction, see S. P. I. No. 49083.

54087. × MALUS ROBUSTA Rehder.

"Seeds from several trees of this interesting hybrid between *M. baccata* and *M. prunifolia.* The flowers and fruits are quite ornamental, but the greatest value lies in the fact that Mr. Judd, the expert propagator at the Arboretum, considers this the best stock on which to graft other kinds of apples."

54088. MALUS SARGENTII Rehder.

"(Arboretum No. 4681.) A low, freely branching shrub, native to Japan, with ovate sharply serrate leaves, small clusters of pure-white flowers and dark-red fruits, which are produced very freely."

For previous introduction, see S. P. I. No. 48084.

54089. × MALUS SCHEIDECKERI Spaeth.

"(Arboretum No. 3510.) A garden hybrid one of whose parents is probably *M. floribunda;* this forms a small tree bearing semi-double pink flowers and red fruits nearly an inch in diameter."

For previous introduction, see S. P. I. No. 27126.

54090. MALUS SIEBOLDII ARBORESCENS Rehder.

"(Arboretum No. 1703.) A Japanese tree with longer leaves than the type and bearing nearly white flowers."

For previous introduction, see S. P. I. No. 49088.

54091. MALUS THEIFERA Rehder.

"(Arboretum No. 7241; Wilson No. 451.) This small stiff-branched tree, native to China, bears fragrant white flowers and globose yellow fruits with red cheeks."

For previous introduction, see S. P. I. No. 45681.

54092. MALUS TRANSITORIA TORINGOIDES Rehder.

"(Arboretum No. 7186.) A tree 16 to 26 feet high native to western Szechwan, China, at altitudes of 9,000 to 12,000 feet, with felted twigs. The leaves 2 inches long are more entire, and the scarlet and yellow fruits are larger, than in *M. transitoria.*"

For previous introduction, see S. P. I. No. 46701.

54093 and 54094. MALUS ZUMI (Mats.) Rehder.

"(Arboretum No. 5002.) A low round-headed tree native to Japan, with oblong yellowish green leaves, and bearing a profusion of pinkish flowers and red fruits."

For previous introduction, see S. P. I. No. 43705.

54061 to 54163—Continued.

54093. "A large-fruited form."

54094. "A small-fruited form."

54095 to 54103. PYRUS spp. Malaceæ. **Pear.**

54095. PYRUS BETULAEFOLIA Bunge.

"(Arboretum No. 1699.) A tree 20 feet high, native to northern China, with round-ovate serrate leaves, crowded clusters of small flowers, and globose fruits about the size of peas."

For previous introduction, see S. P. I. No. 51883.

54096. PYRUS CALLERYANA Decaisne.

"(Arboretum No. 7203.) This Chinese tree, often 30 feet high, has crenate leaves and small flowers and fruits, the latter being globular but contracted at the base into a long slender stalk."

For previous introduction, see S. P. I. No. 49862.

54097. PYRUS CALLERYANA GRACILIFLORA Rehder.

"(Arboretum No. 1078.) A form of Callery's pear which has looser and more slender flower clusters and pink anthers instead of the purple ones of the type."

For previous introduction, see S. P. I. No. 49098.

54098. PYRUS CALLERYANA TOMENTELLA Rehder.

"(Arboretum No. 1079; Wilson No. 556.) A form differing from the type in having dense white tomentum on the young growth."

For previous introduction, see S. P. I. No. 49099.

54099. × PYRUS MICHAUXII Bosc.

"(Arboretum No. 445–1.) A natural hybrid between *P. amygdaliformis* and *P. nivalis*, native to Asia Minor. The shining leaves are ovate-oblong, and the small clusters of white flowers are followed by turbinate greenish yellow fruits."

For previous introduction, see S. P. I. No. 44049.

54100. PYRUS NIVALIS Jacq.

"(Arboretum No. 3293.) This Asia Minor pear is a tree with the young shoots thickly covered with white wool. The ovate entire leaves are 3 inches long, and the conspicuous clusters of white flowers, 1 to 2 inches across, produce yellowish green fruits often 2 inches in diameter."

For previous introduction, see S. P. I. No. 51884.

54101. PYRUS PHAEOCARPA GLOBOSA Rehder.

"(Arboretum No. 1715.) A medium-sized Chinese tree with lustrous deep-green ovate leaves and unusually large white flowers. The fruits differ from those of the type in being globose instead of pear shaped."

For previous introduction, see S. P. I. No. 44045.

54102. PYRUS SALICIFOLIA Pall.

"Var. *pendula*. (Arboretum No. 169.) A pendulous form of the willow-leaved pear, native to Asia Minor, with shiny lanceolate leaves about 4 inches long, pure-white flowers in dense clusters, and small pear-shaped fruits."

For previous introduction, see S. P. I. No. 44053.

54061 to 54163—Continued.

54103. PYRUS SERRULATA Rehder.

"(Arboretum No. 7273.) A Chinese tree, often 25 feet high, with ovate serrulate leaves, small white flowers, and brown ovoid fruits about half an inch long."

For previous introduction, see S. P. I. No. 49100.

54104 to 54163. ROSA spp. Rosaceæ. **Rose.**

54104. ROSA ABIETINA Grenier.

"A Swiss rose which forms a compact shrub 5 to 7 feet high, with 5 to 9 leaflets and clusters of 6 to 8 small rosy flowers."

For previous introduction, see S. P. I. No. 43706.

54105. ROSA ACICULARIS Lindl.

"A low, densely prickly shrub native to northern America, Europe, and Asia. It bears 3 to 7 leaflets and solitary deep-rose flowers followed by pear-shaped fruits."

54106. ROSA ACICULARIS ENGELMANNII (S. Wats.) Crep.
(*R. engelmannii* S. Wats.)

"Engelmann's rose, differing from the type in the distinctly doubly serrate glandular leaflets and the oblong fruits."

54107. ROSA ALBA L.

"A shrub often 6 feet high, with slightly double fragrant flowers and scarlet fruits. Probably of hybrid origin."

For previous introduction, see S. P. I. No. 49102.

54108. ROSA ALBERTI Regel.

"A slender-branched Turkestan rose with 5 to 9 leaflets and white flowers 1 to 2 inches broad."

For previous introduction, see S. P. I. No. 49103.

54109. ROSA AMBLYOTIS Meyer.

"A stout-branched shrub with purple stems, native to Siberia. The leaflets are usually seven, the pink flowers are solitary, and the fruits are about half an inch long."

For previous introduction, see S. P. I. No. 43878.

54110. ROSA ARVENSIS Huds.

"An English rose with creeping stems, seven ovate serrate leaflets, small clusters of white odorless flowers with yellow stamens, and small red fruits."

For previous introduction, see S. P. I. No. 49104.

54111. ROSA BAICALENSIS Turcz.

"A little-known Asiatic rose closely related to *R. acicularis* but kept distinct at the Arboretum."

For previous introduction, see S. P. I. No. 43708.

54112. ROSA BLANDA Ait.

"An erect shrub sometimes 6 feet high, native throughout the northern part of the United States. The large, sweet-scented, single rich-pink flowers are our earliest wild roses to bloom."

For previous introduction, see S. P. I. No. 49106.

54113. ROSA CALIFORNICA Cham. and Schlecht.

"A tall shrub often 8 feet high, native to northwestern America, with stout hooked prickles, five to nine broadly elliptic leaflets, pink flowers an inch across in dense corymbs, and ovoid fruits with a prominent neck."

54061 to 54163—Continued.

54114 to 54117. ROSA CANINA L. Dog-rose.

54114. "Var. *andegavensis*. A form with doubly serrate leaflets and glandular peduncles."

54115. "Var. *subinermis*. An almost thornless form."

54116. "Var. *uralensis*. A form from the Ural Mountains."

54117. Received as *R. bakeri*, which is now referred to *R. canina*.

54118. ROSA CAUDATA Baker.

"(Arboretum No. 7160; Wilson No. 306.) A tall shrub native to western China, with seven to nine oblong leaflets, red flowers 2 inches across, and oblong fruits."

For previous introduction, see S. P. I. No. 43883.

54119. ROSA CHINENSIS MANETTI Dipp.

"An upright shrub with three to seven shining leaflets and deep-pink, usually semidouble flowers. Often used as a stock."

For previous introduction, see S. P. I. No. 43711.

54120. ROSA CINNAMOMEA L.
(*R. pendulina* L.)

"An unarmed shrub, native to Europe, with seven to nine ovate leaflets, solitary pink flowers, and nodding ovate scarlet fruits."

For previous introduction, see S. P. I. No. 43712.

54121. ROSA CORIIFOLIA Fries.

"A European shrub 5 feet high, with pubescent leaflets and short-stemmed pink flowers. Received as *R. monticola*, which is now referred to *R. coriifolia*.

For previous introduction, see S. P. I. No. 49110.

54122. ROSA CUSPIDATA Bieb.

A shrub 2 to 3 feet high, native to Asia Minor, with doubly serrate leaflets, white flowers in clusters of 5 to 10, and globose bluish black fruits. (Adapted from *Bieberstein, Flora Taurico-Caucasia, vol. 1, p. 396.*)

54123. ROSA DAMASCENA Mill. Damask rose.

"A low shrub with numerous stout hooked prickles, five to seven ovate-oblong leaflets, and double red, pink, or white flowers in corymbose clusters."

For previous introduction, see S. P. I. No. 32950.

54124. ROSA DAVURICA Pall.

"A Manchurian shrub closely related to the cinnamon rose (*R. majalis*), with straight slender prickles, smaller doubly serrate leaflets, purple flowers, and ovate scarlet fruits."

For previous introduction, see S. P. I. No. 43887.

54125. ROSA DESEGLISEI Boreau.

A low spreading shrub with white prickles, native to central France, bearing usually five ovate, dentate, pale-green velvety leaflets, and small pink flowers singly or in pairs. (Adapted from *Boreau, Flore du Centre de la France, p. 224.*)

54126. ROSA DUMETORUM Thuill.

"A European shrub with recurved branches and stout hooked prickles. The five to seven orbicular leaflets are simply serrate and pubescent, the single pink flowers are in few-flowered clusters, and the ovoid orange-red fruits are nearly an inch long."

For previous introduction, see S. P. I. No. 49111.

54061 to 54163—Continued.

54127. ROSA FENDLERI Crep.

"A low shrub native to western North America, with straight spines, five to seven oblong-ovate, pubescent dark-green leaflets, small pink flowers, and globose fruits."

For previous introduction, see S. P. I. No. 32952.

54128. ROSA FEROX Bieb.

"This dwarf bush 1 to 2 feet high, native to Asia Minor, has five to seven coarsely serrate leaflets, white flowers in small clusters, and red globose fruits."

For previous introduction, see S. P. I. No. 43714.

54129. ROSA FOLIOLOSA Nutt.

"A low shrub native to the southwestern part of the United States, with seven to nine linear-oblong leaflets, usually solitary pink flowers, and globose fruits."

54130. ROSA GALLICA L.

"Var. *grandiflora*. A large-flowered form of this common European rose, which has three to five leathery ovate leaflets, crimson flowers 2 to 3 inches across, and turbinate brick-red fruits."

For previous introduction, see S. P. I. No. 34481.

54131. ROSA GALLICA OFFICINALIS Thory.
(*R. provincialis* Mill.)

"The Province rose is a double form of the common *R. gallica*."

54132. ROSA GAYIANA Wallr.

"A shrub native to Europe and closely allied to *R. villosa*. The leaflets are oblong-ovate, the thorns are straight, and the pink flowers are solitary."

For previous introduction, see S. P. I. No. 49112.

54133. ROSA GYMNOCARPA Nutt.

"A tall shrub sometimes 10 feet high, native to the west coast of North America. The five to nine glabrous leaflets are broadly oblong, the small solitary flowers are pale pink, and the small globose fruits are orange-red."

For previous introduction, see S. P. I. No. 25578.

54134. ROSA HELIOPHILA ALBA Rehder.

"The white-flowered form of *R. heliophila*, which is a shrub 2 feet high native to the prairies west of the Missouri River. The green stems are very prickly, the 7 to 11 simply serrate leaflets are obovate and pubescent beneath, the small pink flowers are borne in clusters and are followed by red globose fruits."

54135. ROSA JACKII Rehder.

"A procumbent shrub native to Korea, with 7 to 9 elliptical glabrous leaflets, corymbs of white flowers nearly 2 inches across, and small red ovoid fruits."

For previous introduction, see S. P. I. No. 43898.

54136. ROSA JUNDZILLI Besser.

"A central European shrub sometimes 9 feet high, with straight spines, five to seven large glabrous leaflets, small clusters of large pink flowers, and subglobose bright-red fruits."

For previous introduction, see S. P. I. No. 43717.

54137. ROSA MAJALIS Herrmann. **Cinnamon rose.**
(*R. cinnamomea* L. 1759, not 1753.)

"The well-known cinnamon rose, native to Europe, with three to seven oblong leaflets, purple flowers, and scarlet fruits."

54061 to 54163—Continued.

54138. ROSA MICRANTHA J. E. Smith.

"A shrub resembling the dog-rose and native to central Europe. The leaflets are pubescent beneath; the small pink flowers are borne in clusters, and the ovoid fruits are bright red."

For previous introduction, see S. P. I. No. 49043.

54139. ROSA MONTANA Chaix.

"Another ally of *R. canina*, with strong spines, broader leaflets tinged with red, and pale-pink flowers."

For previous introduction, see S. P. I. No. 49114.

54140. ROSA MULTIFLORA CATHAYENSIS Rehd. and Wils.

"The wild, single-flowered form of *R. multiflora*, native to China, with pink flowers instead of white as in the type."

For previous introduction, see S. P. I. No. 49115.

54141. ROSA NUTKANA Presl.

"This stout shrub native to Alaska and southward to Oregon, has five to seven broadly elliptical, double-serrate glabrous leaflets, usually solitary pink flowers nearly 3 inches across, and red globose fruits."

For previous introduction, see S. P. I. No. 49116.

54142. ROSA OXYODON Boiss.

"A Caucasian shrub with five to seven ovate leaflets and solitary pink flowers."

For previous introduction, see S. P. I. No. 49117.

54143. ROSA PALMERI Rydb.

A low shrub native to Missouri and Texas, with slender reflexed prickles, five to nine dark-green lanceolate leaflets pubescent beneath, pink flowers solitary or in small clusters, and globose glandular hispid fruits half an inch in diameter. (Adapted from *North American Flora, vol. 22, p. 502.*)

54144. ROSA PALUSTRIS Marsh.

"The common wild rose on moist land in the eastern part of the United States. The stems are often 8 feet high, with seven narrowly oblong leaflets pubescent beneath, corymbs of pink flowers, and depressed-globose hispid red fruits."

For previous introduction, see S. P. I. No. 49044.

54145. ROSA PISOCARPA A. Gray.

"A slender-stemmed shrub native to the northwest coast of America, with straight or ascending prickles, five to seven oblong leaflets, small pink flowers in dense corymbs, and globose fruits."

For previous introduction, see S. P. I. No. 30262.

54146. ROSA POUZINI Tratt.

"A southern European shrub 7 feet tall, with five to nine serrate leaflets and small pale-pink to white flowers."

For previous introduction, see S. P. I. No. 43906.

54147. ROSA RUBIGINOSA L. Sweetbrier.

"Var. *Carnosa*. A flesh-colored form of the sweetbrier which usually has bright-pink flowers."

54148. ROSA RUGOSA CHAMISSONIANA Meyer.

"A form of the Japanese rose with almost no bristles and with smaller, narrower, and less rugose leaflets."

54061 to 54163—Continued.

54149. ROSA RUGOSA KAMCHATICA (Vent.) Regel.

"A Kamchatcan form of the Japanese rose, with more slender and less bristly stems, thinner leaves, and smaller flowers and fruits."

For previous introduction, see S. P. I. No. 30260.

54150. ROSA SERTATA Rolfe.

"A low shrub, native to western China, with glaucous stems 5 feet high armed with straight slender prickles, 7 to 11 narrowly oblong leaflets, solitary purple flowers 2 to 3 inches across, and deep-red obovoid fruits."

For previous introduction, see S. P. I. No. 43912.

54151. ROSA SPINOSISSIMA L. Scotch rose.

"This low shrub native to Europe and Asia, has 5 to 11 oblong-ovate leaflets, pink, white, or yellowish flowers, and black fruits."

For previous introduction, see S. P. I. No. 43913.

54152. ROSA SPINOSISSIMA ALTAICA (Willd.) Rehder.

"This form of the Scotch rose is a native of the Altai region and is a more vigorous shrub than the type with large white flowers on smooth pedicels."

54153. ROSA SPINOSISSIMA HISPIDA (Sims) Koehne.

"A Siberian form with simply serrate leaflets and sulphur-yellow flowers 3 inches across."

For previous introduction, see S. P. I. No. 43914.

54154. ROSA STELLATA Wooton.

An upright shrub 2 feet high, native to New Mexico, with densely stellate pubescent young stems, three to five cuneate-obovate pubescent leaflets, solitary deep rose-purple flowers 2 to 3 inches across, and reddish brown prickly fruits. (Adapted from *Bulletin Torrey Botanical Club, vol. 25, p. 152.*)

54155. ROSA TUSCHETICA Boiss.

A low shrub native to the Caucasus region, with small firm ovate leaflets and solitary pink flowers. (Adapted from *Boissier, Flora Orientalis, vol. 2, p. 673.*)

54156. ROSA VILLOSA L.

"A densely branched shrub 6 feet high, native to Europe, with nearly straight spines, five to seven ovate grayish green leaflets, pink flowers in small clusters, and ovoid scarlet fruits."

For previous introduction, see S. P. I. No. 43726.

54157. ROSA VILLOSA L.

Received as *R. pomifera*, which is now referred to *R. villosa*.

54158. ROSA WOODSII Lindl.

"A slender bristly stemmed shrub 3 feet high, native to Colorado and Missouri, with five to nine obovate-oblong leaflets pubescent beneath, and small clusters of light-pink flowers 2 inches across, followed by globose fruits."

54159 to 54163. ROSA spp.

"Received under names probably of horticultural origin, for which places of publication have not yet been found."

54061 to 54163—Continued.

54159. ROSA sp.

Received as *R. chyraica.*

54160. ROSA sp.

Received as *R. coraiensis.*

54161. ROSA sp.

Received as *R. kurdestana.*

54162. ROSA sp.

Received as *R. obtusiloba.*

54163. ROSA sp.

Received as *R. urens.*

54164 to 54265.

From Highland Park, Rochester, N. Y. Seeds collected by H. C. Skeels, of the Office of Foreign Seed and Plant Introduction, to be used in stock experiments by experts of the Department of Agriculture. Numbered September, 1921. Quoted notes by Mr. Skeels, except as stated.

54164. CRATAEGUS COCCINIOIDES Ashe. Malaceæ. **Hawthorn.**

A tree 20 feet high native to Missouri, with broadly ovate serrate leaves, compact cymes of white flowers nearly an inch across, with pink stamens and dark-crimson fruits. (Adapted from *Sargent, Trees of North America, p. 458.*)

54165 to 54265. ROSA spp. Rosaceæ. **Rose.**

54165. ROSA ACICULARIS Lindl.

For previous introduction, see S. P. I. No. 54105.

54166. ROSA ACICULARIS BOURGEAUIANA Crep.
(*R. sayi* Schwein.)

"A low shrub native to Ontario and westward to Colorado, with three to seven narrowly oblong leaflets, differing from the type in having larger deep-rose flowers nearly 3 inches across and globose fruits."

54167. ROSA ACICULARIS ENGELMANNII (S. Wats.) Crep.
(*R. engelmannii* S. Wats.)

For previous introduction, see S. P. I. No. 54106.

54168. ROSA ACICULARIS GMELINI (Bunge) C. Schneid.
(*R. carelica* Fries.)

A form native to northern Europe and Asia, differing from the type in having five to seven leaflets on the flowering branches, smooth but glandular peduncles, and long pear-shaped shining fruits. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 582.*)

54169. ROSA ACICULARIS NIPPONENSIS (Crep.) Koehne.

"A Japanese form with smaller leaflets on bristly petioles and with glandular-hispid branchlets and pedicels."

54170. ROSA ALBA L.

For previous introduction, see S. P. I. No. 54107.

54171. ROSA ALBERTI Regel.

Chenault No. 5630.

For previous introduction, see S. P. I. No. 54108.

54172. ROSA AMBLYOTIS Meyer.

For previous introduction, see S. P. I. No. 54109.

54173. ROSA ARVENSIS Huds.

For previous introduction, see S. P. I. No. 54110.

54164 to 54265—Continued.

54174. ROSA BALTICA Roth.

Chenault No. 3492.

A European shrub closely related to *R. canina* from which it differs in having purple stems with straight prickles and oblong-ovate, simply serrate leaflets. (Adapted from *Roth, Novae Species Plantarum, p. 234.*)

54175. ROSA BELGRADENSIS Pancic.

Chenault No. 5862. "This southern European rose, closely related to *R. rubiginosa*, is a medium-sized shrub with glandular-pubescent leaflets and clusters of pink flowers nearly 2 inches across."

For previous introduction, see S. P. I. No. 49105.

54176. ROSA BELLA Rehd. and Wils.

"A Chinese shrub often 8 feet in height, with seven to nine leaflets, solitary pink flowers 2 inches across, and ovoid scarlet fruits."

For previous introduction, see S. P. I. No. 43881.

54177. ROSA BLANDA Ait.

For previous introduction, see S. P. I. No. 54112.

54178. ROSA BLANDA Ait.

"Var. *alba*. A white-flowered form, of nursery origin."

54179. ROSA BORBONICA Morren. **Bourbon rose.**

Var. *Mme. Ernest Calvert.*

54180. ROSA CALIFORNICA Cham. and Schlecht.

For previous introduction, see S. P. I. No. 54113.

54181 to 54183. ROSA CANINA L. **Dog-rose.**

54181. Var. *subinermis.*

For previous introduction, see S. P. I. No. 54115.

54182. Received as *Rosa montivaga*, which is now referred to the dog-rose (*R. canina*).

54183. Received as *Rosa scabrata*, which is also now referred to *R. canina.*

54184 and 54185. ROSA CAROLINA L.

54184. A form of the Carolina rose from Campbell Mountain, Essex County, N. Y.

54185. Var. *Jack Siskow.*

For previous introduction, see S. P. I. No. 49109.

54186. ROSA CAUDATA Baker.

For previous introduction, see S. P. I. No. 54118.

54187. × ROSA CHABERTI Desportes.

"One of the many hybrids between *R. gallica* and *R. canina.*"

54188. ROSA CHINENSIS × NOISETTIANA.

Var. *Hebe's lip.*

54189. ROSA CINNAMOMEA L.
(*R. pendulina* L.)

For previous introduction, see S. P. I. No. 54120.

54190. ROSA CINNAMOMEA MALYI (Kerner) Skeels.
(*R. malyi* Kerner.)

"This Dalmatian rose, with bright-red flowers and leaflets similar to those of the Scotch rose, is possibly a hybrid between *Rosa cinnamomea* and *R. spinosissima.*"

For previous introduction, see S. P. I. No. 33199.

54164 to 54265—Continued.

54191. ROSA CUSPIDATA Bieb.

For previous introduction, see S. P. I. No. 54122.

54192. ROSA DAMASCENA Mill. **Damask rose.**

For previous introduction, see S. P. I. No. 54123.

54193. ROSA DAVURICA Pall.

For previous introduction, see S. P. I. No. 54124.

54194. ROSA DESEGLISEI Boreau.

For previous introduction, see S. P. I. No. 54125.

54195. ROSA FEDTSCHENKOANA Regel.

"A shrub native to Turkestan, with seven to nine oblong leaflets, clusters of one to four white flowers 2 inches across, and pear-shaped red fruits."

For previous introduction, see S. P. I. No. 43890.

54196. ROSA FENDLERI Crep.

For previous introduction, see S. P. I. No. 54127.

54197. ROSA FEROX Bieb.

For previous introduction, see S. P. I. No. 54128.

54198. ROSA FERRUGINEA Vill.

"An erect shrub native to the Alps and Pyrenees, with stems 5 to 7 feet high and covered with a purple bloom. The five to seven purplish leaflets and the clusters of deep-red flowers, followed by the red fruits, make this a decidedly ornamental species."

Received as *Rosa rubrifolia ferruginea*, but *R. ferruginea* is now generally given specific rank.

For previous introduction, see S. P. I. No. 43587.

54199. ROSA GALLICA L.

For previous introduction, see S. P. I. No. 54130.

54200. ROSA GALLICA L.

Var. *macrantha*.

54201. ROSA GALLICA × CANINA.

"One of the hybrids between *Rosa gallica* and the dog-rose (*R. canina*). A strong-growing, freely fruiting shrub, valuable as a stock."

54202 to 54204. ROSA GALLICA × (?).

"Compact shrubs well loaded with large fruits and seemingly suited for stock purposes."

54202. *Apothecary's* rose. 54204. Var. *Crested Province*.

54203. Var. *Beranger*.

54205 to 54207. ROSA GLAUCA Vill.

54205. "(Chenault No. 5348.) A European shrub closely related to *Rosa canina* but having broadly ovate, bluish green leaflets and purplish flowers."

54206. Received as *Rosa complicata*, which is now referred to *R. glauca*.

54207. Received as *Rosa gallica reuteri*, but *R. reuteri* is now considered to be a form of *R. glauca*.

54208. ROSA GLUTINOSA Sibth. and Smith.

"A dwarf compact bush native to southeastern Europe, with five to seven orbicular leaflets, small pinkish white, solitary flowers, and globose bright-red fruits."

For previous introduction, see S. P. I. No. 49951.

54164 to 54265—Continued.

54209. ROSA HELIOPHILA Greene.

"A shrub 2 feet high, native to the prairies west of the Missouri River. The green stems are prickly, the 7 to 11 simply serrate leaflets are obovate and pubescent beneath, the small pink flowers are borne in clusters and are followed by red globose fruits."

54210. × ROSA HIBERNICA J. E. Smith.

"A hybrid between *R. canina* and *R. spinosissima*, with glaucous green foliage and small pink flowers."

For previous introduction, see S. P. I. No. 43716.

54211. × ROSA INVOLUTA J. E. Smith.
(*R. sabini* Woods.)

This Irish hybrid between *R. spinosissima* and *R. tomentosa* has five to seven oval leaflets densely pubescent beneath, usually solitary small pink flowers, and bright-red globose fruits. (Adapted from *Willmott, The Genus Rosa, p. 281.*)

54212. ROSA JACKII Rehder.

For previous introduction, see S. P. I. No. 54135.

54213. ROSA JUNDZILLI Besser.

For previous introduction, see S. P. I. No. 54136.

54214. × ROSA MACRANTHA Desportes.

Var. *superius.*

A hybrid between *R. canina* and *R. gallica*, this rose from southern France has arching green stems, five to seven subcoriaceous oblong leaflets, small clusters of large pink flowers, and red globose fruits. (Adapted from *Willmott, The Genus Rosa, p. 403.*)

54215. ROSA MAJALIS Herrmann. **Cinnamon rose.**
(*R. cinnamomea* L. 1759, not 1753.)

For previous introduction, see S. P. I. No. 54137.

54216. ROSA MANCA Greene.

A dwarf shrub seldom over one foot high, native to the mountains of Colorado, with usually seven obovate thin leaflets less than an inch in length, small solitary pink flowers, and globose fruits. (Adapted from *Greene, Pittonia, vol. 4, p. 11.*)

54217. ROSA MICRANTHA J. E. Smith.

For previous introduction, see S. P. I. No. 54138.

54218. ROSA MONTANA Chaix.

For previous introduction, see S. P. I. No. 54139.

54219. ROSA MOSCHATA NASTARANA Christ.
(*R. pissarti* Carr.)

A Persian form of the musk rose with five to seven smaller ovate leaflets, small clusters of large pure-white flowers and smooth globose red fruits. (Adapted from *Willmott, The Genus Rosa, p. 39.*)

54220. ROSA MULTIBRACTEATA Hemsl. and Wils.

"A western Chinese shrub 6 feet high with pairs of straight prickles, seven to nine broadly ovate leaflets, small clusters of pink flowers, and ovoid orange-red fruits."

For previous introduction, see S. P. I. No. 43902.

54221. ROSA MULTIFLORA Thunb.

(Chenault No. 5540.) "This well-known Japanese rose is a strong climbing shrub with nine obovate leaflets and large clusters of small white flowers."

For previous introduction, see S. P. I. No. 40626.

54164 to 54265—Continued.

54222. ROSA MULTIFLORA × CHINENSIS.
(*R. polyantha* Hort.)

"Received as *Rosa polyantha*, which is a trade name for many varieties originating as hybrids between the China rose and *R. multiflora*."

54223. ROSA OMISSA Desegl.

A shrub 3 to 5 feet high, native to Europe, with five to seven ovate-elliptical leaflets, pink flowers, and large smooth obovoid red fruits. (Adapted from *Billotia, vol. 1, p. 47.*)

54224 and 54225. ROSA OXYODON Boiss.

54224. For previous introduction, see S. P. I. No. 54142.

54225. (Chenault No. 5880.) Var. *caucasica.*

54226. ROSA PALUSTRIS Marsh.

Var. *nuttalliana.* "A horticultural form with flowers larger than in the type and appearing later in the season."

For previous introduction, see S. P. I. No. 49044.

54227. ROSA PISOCARPA A. Gray.

For previous introduction, see S. P. I. No. 54145.

54228. ROSA RUBRIFOLIA Vill.

A southern European shrub 6 feet high, with the whole plant glaucous and tinged with red. The five to seven oblong leaflets are simply toothed, the bright-red flowers are in small clusters, and the small globose fruits are red and pulpy. (Adapted from *Willmott, The Genus Rosa, p. 399.*)

54229. ROSA RUGOSA KAMCHATICA (Vent.) Regel.

For previous introduction, see S. P. I. No. 54149.

54230. ROSA RUGOSA × FERRUGINEA.

(Chenault No. 5383.) "A hybrid between the Japanese rose and *Rosa ferruginea* of Central Europe."

54231. ROSA SATURATA Baker.

(Arnold Arboretum No. 7169; Wilson No. 316.) "A central Chinese shrub often 8 feet high, nearly free from prickles, with seven ovate-lanceolate pale leaflets 2 to 3 inches long. The solitary dark-red flowers with purple stamens are followed by ovoid coral-red fruits nearly an inch long."

For previous introduction, see S. P. I. No. 49120.

54232. ROSA SETIPODA Hemsl. and Wils.

"This tall shrub often 10 feet high, native to central China, has pairs of wide-based straight prickles, seven to nine elliptical leaflets, loose corymbs of pale-pink flowers 2 inches across, and oblong-ovoid deep-red fruits an inch long."

For previous introduction, see S. P. I. No. 37978.

54233 to 54235. ROSA SPINOSISSIMA L. Scotch rose

54233. For previous introduction, see S. P. I. No. 54151.

54234. Var. *Jupiter*, a horticultural variety.

54235. Var. *penicillata.*

54236. ROSA SPINOSISSIMA ALTAICA (Willd.) Rehder.

Var. *maxima.*

For previous introduction, see S. P. I. No. 54152.

54164 to 54265—Continued.

54237. ROSA SPINOSISSIMA HISPIDA (Sims) Koehne.

For previous introduction, see S. P. I. No. 54153.

54238. ROSA SPINOSISSIMA LUTEOLA Andrews.
(*R. ochroleuca* Swartz.)

(Chenault No. 5760.) "A Scotch form differing from the type in having usually seven leaflets and pale-yellow flowers 2 inches across."

54239. ROSA SPINOSISSIMA × (?).

Var. *Lady Bailey.*

54240. ROSA SWEGINZOWII Koehne.

(Purdom No. 802.) "A western Chinese climber often 16 feet high, with usually nine ovate-oblong leaflets, small clusters of pink flowers, and oblong fruits an inch long."

For previous introduction, see S. P. I. No. 43915.

54241. ROSA TURKESTANICA Regel.

"A tall shrub native to Turkestan, with few prickles and bearing bright-red ovoid fruits an inch long."

For previous introduction, see S. P. I. No. 49122.

54242. ROSA VENOSA Swartz.

A Swedish shrub closely related to *Rosa canina*, from which it differs in the strongly veined, doubly serrate leaflets which are glabrous and glaucous beneath. (Adapted from *Sprengel, Systema Vegetabilium, vol. 2, p. 554.*)

54243 and 54244. ROSA VILLOSA L.

54243. Var. *arduenae.*

54244. Received as *Rosa pomifera*, which is now referred to *R. villosa.*

For previous introduction, see S. P. I. No. 54156.

54245. ROSA WEBBIANA Wall.

"An erect shrub native to the Himalayas of Turkestan, with five to nine very small orbicular glabrous leaflets, large solitary pink flowers, and ovoid bright-red fruits."

For previous introduction, see S. P. I. No. 49954.

54246. ROSA WICHURAIANA × (?).

Var. *Goldfinch.*

54247. ROSA WILLMOTTIAE Hemsl.

"A western Chinese rose forming a densely branched shrub often 10 feet high, with seven obovate leaflets, solitary rose-purple flowers, and bright orange-red globose fruits."

For previous introduction, see S. P. I. No. 32697.

54248. ROSA WOODSII Lindl.

For previous introduction, see S. P. I. No. 54158.

54249. ROSA XANTHINA Lindl.

Forma *normalis* Rehd. and Wils. "The single-flowered form of the Chinese yellow rose which had been described by Lindley in 1830 from a Chinese drawing and was not otherwise known until its discovery by Frank N. Meyer in 1907. The shrub is upright, often 10 feet high, with 7 to 11 elliptical, dentate leaflets, and solitary short-stalked yellow flowers about 2 inches across."

For previous introduction, see S. P. I. No. 21620.

54164 to 54265—Continued.

54250 to 54265. Rosa spp.

"Several roses received under names for which places of publication have not yet been found."

54250. "(Chenault No. 5351); labeled *R. chyraica.*"

54251. "(Chenault No. 5866); labeled *R. kurdistena.*"

54252. "Labeled *R. nivea villosa.*"

54253. "(Chenault No. 5357); labeled *R. praecox.*"

54254. "(Chenault No. 5353); labeled *R. urens.*"

54255. "(Chenault No. 5524); labeled *R. cinnamonica*, but the seeds do not agree with seeds of either *R. cinnamomea* L. 1753 (*R. pendulina*) or with *R. majalis* Herrm. (*R. cinnamomea* L. 1759)."

54256. "(Chenault No. 5905); also labeled *R. cinnamonica.*"

54257. "(Purdom No. 837.)"

54258. "(Purdom No. 841.)"

54259. "(Chenault No. 5372.)"

54260. "(Chenault No. 5905); small fruit."

54261. "Var. *Catherine Seyton.*"

54262. "Var. *Shakespeare.*"

54263. "The stock on which *R. turkestanica* had been grafted."

54264. "The stock on which *R. villosa* var. *arduenae* had been grafted."

54265. "An undetermined rose from Olney, Ill."

54266 and 54267. Malus spp. Malaceæ. Crab apple.

From Geneva, N. Y. Seeds collected by H. C. Skeels, of the Office of Foreign Seed and Plant Introduction, for stock experiments by experts of the Department of Agriculture. Numbered September, 1921. Quoted notes by Mr. Skeels.

54266. Malus baccata (L.) Moench.
(*Pyrus baccata* L.)

"Seeds of S. P. I. No. 24366 growing in the orchard at the Geneva experiment station. This number was sent originally from the Arnold Arboretum by Mr. Dawson, who recommended it as a good-keeping crab apple."

54267. Malus sp.

"Seeds of S. P. I. No. 21065 growing in the Geneva experiment-station orchard. It was originally collected by Frank N. Meyer at Kirwin, Manchuria."

54268. Malus coronaria (L.) Mill. Malaceæ. Crab apple.
(*Pyrus coronaria* L.)

From Takoma Park, Md. Seeds collected by H. C. Skeels, of the Office of Foreign Seed and Plant Introduction. Numbered September, 1921.

"Fruits collected under trees growing in my yard. These trees were grown by Dr. D. N. Shoemaker from seeds collected under wild trees near Arlington Experimental Farm, Va. The pink blossoms are to me the most beautiful and the most fragrant of our American flowers." (*Skeels.*)

54269 to 54281.

From Ecuador. Collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received July 21, 1921. Quoted notes by Mr. Popenoe.

54269 to 54281—Continued.

54269. BERBERIS QUINDUENSIS H. B. K. Berberidaceæ. **Barberry.**

"(No. 622. Hacienda La Esperanza, near El Angel, Province of Carchi. June 13, 1921.) *Espino.* Plants collected at an altitude of about 11,500 feet. This is one of the handsomest of the wild barberries which I have seen in Ecuador. It makes an arborescent shrub up to 10 or 12 feet high, and has large glossy, stiff dark-green leaves. The orange-yellow flowers, which are produced in racemes about 3 inches long, are half an inch broad. They are followed by small clusters of oval blue-black fruits. The species is worthy of a trial as an ornamental."

54270 to 54278. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

54270. "(Nos. 612 and 626. Hacienda San Vicente, Ibarra, Ecuador. May 28 and June 15, 1921.) Budwood of avocado No. 47, *Tamayo.*"

For previous introduction and description, see S. P. I. No. 53182.

54271. "(Nos. 614 and 628. Ibarra, Ecuador. May 27 and June 15, 1921.) Budwood of avocado No. 49, *Egas.*"

For previous introduction and description, see S. P. I. No. 53183.

54272. "(Nos. 615 and 629. Ibarra, Ecuador. May 28 and June 15, 1921.) Budwood of avocado No. 50, *Chota.*"

For previous introduction and description, see S. P. I. No. 53184.

54273. "(Nos. 616 and 630. Ibarra, Ecuador. May 27 and June 17, 1921.) Budwood of avocado No. 51, *Carchi.*"

For previous introduction and description, see S. P. I. No. 53185.

54274. "(No. 631. Ibarra, Ecuador. June 16, 1921.) Cuttings of avocado No. 52, *Irumina.* The parent tree stands in a huerta at the Hacienda Irumina, only a few hundred feet from the house, at an altitude of 6,200 feet. This variety, which appears to be of the Mexican type, though the fruit is rather thick skinned for one of that race, is notable for the excellent quality of its deep-yellow flesh. The fruit is long and slender, not of very convenient form; it weighs about 10 ounces and has a medium-sized seed. While it may not prove to be an avocado of great commercial value, it is certainly worthy of a trial in California and Florida.

"Formal description: The parent tree is about 50 feet high, erect in habit, with a spread of about 30 feet. It is probably 20 years old if not more. The trunk is 18 inches thick at the base, forked at 10 feet, and gives off lateral branches at 18 feet. It is said to bear good crops. The leaves when crushed are faintly anise scented.

"The fruit is pyriform to very slender pyriform, necked; weight about 10 ounces, length 5 to 6 inches, greatest breadth 2½ to 2¾ inches; base tapering, often curved to one side; stem inserted centrally, apex rounded to broadly pointed; surface light green, with numerous greenish yellow dots; skin scarcely 0.5 millimeters thick, rather firm and tough; flesh cream-yellow, pale green close to the skin, with very few fiber markings, the flavor very rich, nutty, and pleasant; quality excellent; seed conical, rather slender, medium sized, loose or tight in the cavity. Main ripening season at Irumina probably from December to March.

"The season at which it will ripen in the United States can not be ascertained without a trial in California and Florida."

54275. "(No. 632. Ibarra, Ecuador. June 16, 1921.) Cuttings of avocado No. 53, *Imbabura.* The parent tree stands in the huerta at the Hacienda Irumina, only a few hundred feet from the house and about 50 feet from tree No. 52, at an altitude of 6,200 feet. This is a Mexican avocado of medium size (for that race), of good quality, and in every way a desirable fruit, so far as can be ascertained by a brief study of the variety. It will require a test

54269 to 54281—Continued.

in the United States, however, to determine whether or not it has characteristics which make it of commercial value.

"Formal description: The parent tree is about 45 feet high, with a spread of 60 feet, and is at least 50 years old. The trunk is 3 feet thick at the base, forked at 10 feet above the ground. The crown is rather open, and some of the main limbs extend almost horizontally. The foliage when crushed is distinctly anise scented.

"The fruit is oblong-obovoid; weight 6 to 7 ounces, length about 4 inches, greatest breadth about 2½ inches; base bluntly pointed, with the stem inserted to one side; apex rounded to broadly pointed; surface pale olive-green, blushed with maroon-purple, and with very numerous large whitish green dots; skin not quite 0.5 millimeter thick, firm and leathery in texture; flesh rich cream-yellow, greenish close to the skin, with few fiber markings, the flavor very rich, nutty, and pleasant; quality excellent; seed oblong-conic, tight to slightly loose in the cavity. Ripening season at Irumina mainly from December to March.

"This fruit when grown under good cultivation in the United States will probably weigh from 8 to 10 ounces. The season at which it will ripen in that country can be ascertained only by a trial."

54276. "(No. 633. Ibarra, Ecuador. June 16, 1921.) Cuttings of avocado No. 54, *Capac*. The parent tree is growing in the huerta rented by Rosa Gonzales, at the Hacienda Carpuela, at an altitude of 5,300 feet. The fruit is a good-sized Mexican avocado about 9 ounces in weight, obovoid in form, purple, and of excellent quality. The seed is relatively small, and the tree is said to be very productive. The variety is worthy of a trial in California and in the cooler avocado-growing regions of Florida.

"Formal description: The parent tree is about 45 feet high, slender and erect in habit, with a trunk 18 inches thick at the base, forked 2 feet above the ground. The oval crown is moderately dense, and the foliage rich green in color and healthy in appearance.

"The fruit is oblong-pyriform to oval-obovoid in form; weight about 9 ounces, length 4 to 4½ inches, greatest breadth about 2¾ inches; base broadly pointed, the stem inserted slightly to one side; apex rounded to slightly and obliquely flattened; surface of ripe fruit glossy purple-black, with very few dots visible; skin less than 0.5 millimeter thick, relatively tough; flesh yellowish cream color, tinged green near the skin, with numerous fiber markings; flavor nutty, rich, and pleasant; quality good; seed rather small, ovate to oval, tight in the cavity with both seed coats adhering closely to the cotyledons. Ripening season mainly from November to March, but a few fruits ripen at other seasons of the year.

"Some specimens do not show any fiber discoloration in the flesh; this is perhaps a question that depends, to a certain extent, upon the degree of maturity which the fruit has reached at the time it is picked."

54277. "(No. 634. Ibarra, Ecuador. June 16, 1921.) Cuttings of avocado No. 55, *Inca*. The parent tree is growing in one of the huertas at the Hacienda San Vicente, a few hundred yards north of the house, at an altitude of 6,100 feet. This is one of the most promising avocados obtained in the Chota Valley, if not the most promising of all. It is an unusually large fruit for one of the Mexican race, and at the same time has a very small seed, and flesh of excellent quality. It is worthy of a careful trial in the avocado-growing regions of the United States.

"Formal description: The parent tree is about 50 feet high and of erect round-topped form, with an open well-branched crown. The trunk is about 2 feet thick at the base and gives off several large limbs about 10 feet above the ground. There is a faint aniselike odor to the crushed leaves. So far as can be

54269 to 54281—Continued.

ascertained by an examination of the tree it is of the Mexican race; there is a possibility, however, that it may be a hybrid between this race and the West Indian.

"The fruit is pyriform-obovoid to oblong-obovoid; weight 10 to 15 ounces; length 4¼ to 5 inches; greatest breadth 3 to 3½ inches; base broadly pointed, the stem inserted obliquely; apex slightly and obliquely flattened; surface smooth, pale yellow-green, with numerous large cream-colored dots; skin thin, less than 0.5 millimeter; flesh yellowish cream color, pale green very close to the skin, with very few and inconspicuous fiber markings, and of smooth oily texture, the flavor rich, not watery, very agreeable, with pronounced nutty character; quality excellent; seed round-conic, relatively small, tight in the cavity or nearly so, the seed coats sometimes separating over a portion of the seed, cotyledons slightly rough.

"The season of this variety, as of others in the Chota Valley, is difficult to determine accurately. The main crop probably ripens from September to December, but there are a few fruits available at nearly all times of the year."

54278. "(No. 635. Ibarra, Ecuador. June 16, 1921.) Cuttings of avocado No. 56, *Huira*. The parent tree is growing in one of the huertas at the Hacienda Carpuela, at an altitude of 5,300 feet. This is a Mexican variety of good size and quality. While not as promising as some of the other varieties in the Chota collection, it is well worthy of a trial in California and in the cooler portions of the avocado-growing region of Florida. It should prove to be fairly hardy.

"Formal description: The parent tree is about 40 feet high, erect and shapely in form, and apparently a vigorous grower. The foliage when crushed is distinctly anise scented. The trunk is about 15 inches thick at the base and branches at 8 feet above the ground.

"The fruit is obovate in form; weight about 8 ounces, length nearly 3 inches; base pointed, with the stem inserted obliquely; apex thin, as is characteristic of the Mexican race; flesh cream-yellow, tinged green near the skin, with a few fiber markings; flavor unusually rich and nutty; quality excellent; seed broadly obovoid-conic, rather large, tight in the cavity, with both seed coats closely surrounding the nearly smooth cotyledons. Season at Carpuela not definitely known; the main crop probably matures between October and January, but there are a few ripe fruits available at other times of the year. It is impossible to predict with accuracy the season at which this, as well as the other varieties from the Chota Valley, will ripen their fruits in the United States; the matter can be determined only by trial."

54279 and 54280. RUBUS ADENOTRICHOS Schlecht. Rosaceæ.

Blackberry.

54279. "(No. 623. Ibarra, Ecuador. June 13, 1921.) Plants of *Mora común*. From the Hacienda La Rinconada, in the Province of Carchi, at an altitude of about 11,000 feet. This is a very vigorous Rubus, forming large clumps up to 15 or 18 feet high. Its stout canes are thickly clothed with short, stiff, bright maroon-colored hairs, while its leaves are formed of five ovate-acuminate to oblong-acuminate, finely serrate leaflets 3 to 4 inches long. The white flowers are produced in large loose panicles sometimes more than a foot in length and are followed by an abundance of oval deep-purple fruits about three-quarters of an inch long. The drupelets are numerous and crowded closely together; the seeds are moderately large, but not very troublesome in the mouth. The flavor is practically the same as that of the cultivated blackberry of the North, and the quality is good. Because of its productiveness as well as this latter feature, the species is worthy of a trial in the southern and western United States."

54269 to 54281—Continued.

54280. "(No. 624. Ibarra, Ecuador. June 13, 1921.) A slightly different variety."

For previous introduction, see S. P. I. No. 53995.

54281. VACCINIUM FLORIBUNDUM H. B. K. Vacciniaceæ. **Mortiño.**

"(No. 621. Ibarra, Ecuador. June 13, 1921.) Plants of *mortiño* from Hacienda La Rinconada, Province of Carchi, Ecuador, at an altitude of about 11,500 feet. A very abundant indigenous plant throughout the Ecuadorian highlands at altitudes between 10,000 and 12,000 feet. It is not cultivated. The fruit is sometimes brought into the markets of Andean villages. In some parts of the country its ripening season, March to August, is the occasion for picnics in the campo, the inhabitants of the towns and villages betaking themselves to the páramos, where this plant grows abundantly, to gather and eat the fruit.

"The *mortiño* is a slender, handsome shrub about 6 feet high (often lower than this), with very small elliptic to ovate-acute, finely serrate leaves crowded on the stems, and small bell-shaped deep-pink flowers produced in great abundance. The fruit is roundish, up to about one-third of an inch in diameter, deep glaucous blue, juicy, subacid and pleasant to the taste, and containing several very small seeds. It greatly resembles some of the blueberries of the United States and could probably be developed by cultivation into a much more valuable fruit than it is to-day."

54282 to 54296. ORYZA SATIVA L. Poaceæ. **Rice.**

From Saigon, Cochin China, French Indo China. Seeds presented by M. E. Carle, director, Laboratoire de Genetique, Institut Scientifique de l'Indochine. Received September 13, 1921. Notes adapted from Bulletin Agricole, de l'Institut Scientifique de Saigon, vol. 2.

54282. *Bông-chanh.* An excellent variety of the Gocong type with a growing period of 202 to 234 days, and a yield (February 17 to 25) of 1,726 to 2,667 kilograms per hectare (1,539 to 2,375 pounds per acre). Originated at Dinhthoi (Cantho). (*P. 42.*)

54283. *Bông-dua.* A good variety of the Gocong type, yielding in 183 to 235 days (February 17 to 25) 1,664 to 3,600 kilograms per hectare (1,484 to 3,211 pounds per acre). From Saigon. (*P. 42.*)

54284. *Bông-sen.* A fine variety of the Gocong type originated in the neighborhood of Cantho with a growing period of 162 to 215 days, and a yield of 2,360 to 3,850 kilograms per hectare (2,105 to 3,434 pounds per acre). (*P. 42.*)

54285. *Cadung Baria.*

54286. *Cadung Gocong.* A fine grain of the Gocong type from the Seed Selection Laboratory, with a growing period of 152 days, maturity January 30, and a yield of 1,652 kilograms per hectare (1,470 pounds per acre). (*P. 43.*)

54287. *Huêky.* A variety of American production, with a round dense grain of the Gocong type, maturing in 166 to 230 days from date of sowing. The yield varies from 1,200 to 3,851 kilograms per hectare (1,070 to 3,040 pounds per acre).

The plant grows vigorously to a height of 1.4 to 1.6 meters (5 feet) and fruits abundantly. This nonshattering variety has proved resistant to disease and drought which greatly reduced the yield of other varieties. The head is 23 to 25 centimeters (9 to 10 inches) long, and the shelled grains are large, regular, and white. It has been given superior ranking over Spanish rice. (*Pp. 43 and 75.*)

54288. *Lu-phung-tien.* A variety of the Gocong type sent out from Saigon, with a growing period of 180 to 208 days, maturity January 18 to February 15, and yields of 2,321 to 2,967 kilograms per hectare (2,070 to 2,646 pounds per acre). (*P. 42.*)

54282 to 54296—Continued.

54289 to 54292. These four numbers represent a series of forms of so-called floating rices, rice with a different flavor from that of ordinary rice. For the first two months floating rice grows like ordinary rice, but later floods of the Mekong River, which start in July, gradually submerge all of the plant except the leaf tips. The water recedes after November, the stalks bend down, and when the lower part touches the ground the nodes take root.

The stalk of floating rice is thicker than that of ordinary rice and is from 2.5 to 5 meters (8 to 16 feet) long. Only the tips of the stalks are leafy. The growing period is 8 to 9 months, from April or May to December or January. No care is given the crop after the sowing. (*P. 46.*)

54289. *Nam-vian*, or *ba sao*. A recent introduction from Cambodia, with stalks 12 feet long and thick heads, up to a foot long. (*P. 49.*)

54290. *Nàng-dùm*. A recent introduction from Cambodia. Of the floating rice group, this is the only variety which yields white fine rice; it requires only a medium supply of water. The grain falls easily from the short head. (*P. 48.*)

54291. *Nàng-gông-trang*. A variety of the Gocong type, sent out from Saigon, with medium-sized grain yielding (1917, December 11, to 1918, February 26) 2,337 to 2,967 kilograms per hectare (2,080 to 2,747 pounds per acre). (*P. 42.*)

54292. *Nàng-rùm*. A variety from Saigon with a normal growing period of 120 days, maturity from December 20 to January 5 and a normal yield of 1,500 to 2,167 kilograms per hectare (1,338 to 1,932 pounds per acre). (*P. 41.*)

54293. *Ramay*. A large round grain of the type Gocong, which much resembles *Huêky*. Maturity requires 166 to 228 days; the yield is from 1,083 to 3,677 kilograms per hectare (966 to 3,281 pounds per acre). Cultivated at Cantho, Saigon. (*P. 43.*)

54294. *Rá-muoi*. A fine variety with a large round seed, of the Gocong type, with a growing period of 195 to 220 days and a yield (February 20, 21) of 1,684 to 3,722 kilograms per hectare (1,502 to 3,321 pounds per acre). Originated at Dinhthoi (Cantho). (*P. 42.*)

54295. *Sào-ong*. This fine variety of the Gocong type originated in the neighborhood of the station of Cantho, has a growing period of 188 to 199 days, ripens January 25, and yields 2,474 to 3,466 kilograms per hectare (2,207 to 3,092 pounds per acre). (*P. 42.*)

54296. *Song-lon*. The oldest known variety, extensively distributed from Cambodia. The large thick grains are in heads 7 to 9 inches long. (*P. 48.*)

54297. Warszewiczia coccinea (Vahl) Klotzsch. Rubiaceæ.

From Panama. Cuttings collected by Dr. David Fairchild, Agricultural Explorer in Charge of the Office of Foreign Seed and Plant Introduction. Received September 16, 1921.

"This is a remarkable ornamental tree. Mr. Dorsett and I first saw it on the banks of Gatun Lake at Rio Sucio. At a distance its racemes, over 2 feet long, with their brilliant scarlet enlarged sepals produced a startling splash of color against the dark-green foliage. The color is as vividly scarlet as the autumn colors of the sour gum, the sorrel tree, or some species of Japanese maple. The colored 'leaves' are in reality enlarged sepals. Only one flower in each cluster of flowers on the raceme has an enlarged sepal. Though the flowers themselves are not over a quarter of an inch in diameter, the enlarged sepals are often 2½ inches long. The fact that this tree blooms in summer, the wet season, whereas most of the showy flowering trees of the Tropics bloom in the dry season, would seem to make this an unusually valuable ornamental tree for tropical regions. It is certainly worthy of a place in every collection of tropical trees." (*Fairchild.*)

54298. RHOPALOSTYLIS SAPIDA (Soland.) Wendl. and Drude. Phœnicaceæ. **Nikau palm.**

From Birkenhead, Auckland, New Zealand. Seeds presented by C. L. Wragge. Received September 28, 1921.

An extremely elegant palm native to New Zealand, where the young inflorescence is eaten. The palm is of peculiar interest as being one of the most southern, occurring as far as latitude 38° 22′ S., whereas 38° S. is the limit of palms in Australia and South America, and 30° S. in Africa. The trunk 6 to 12 feet high bears pinnate leaves 4 to 6 feet long and a much-branched densely flowered spadix 18 to 24 inches long. The pale pinkish flowers are very numerous. (Adapted from *Curtis's Botanical Magazine, pl. 5139.*)

For previous introduction, see S. P. I. No. 47878.

54299 to 54302. MALUS SYLVESTRIS Mill. Malaceæ. **Apple.**

From Santiago, Chile. Scions presented by Sr. Salvador Izquierdo. Received September 30, 1921. Quoted notes by Wilson Popenoe, except as otherwise stated.

"Four varieties of apples which I have selected during recent years, and which I consider very interesting. They are entirely resistant to the attacks of the woolly aphis (Schizoneura)." (*Izquierdo.*)

"Chilean apples are probably inferior to our own, in so far as dessert quality is concerned. Most of them are small fruits, with rather mealy flesh of sweet and not very sprightly flavor. They are interesting to us because of their resistance to the woolly aphis, the worst pest of Chilean orchards. The main purpose in introducing them is for trial as aphis-resistant stock plants on which to graft our best commercial sorts."

54299. "*Admirable de Otoño* (*Autumn Beauty*). Described by Sr. Izquierdo as a large excellent autumn fruit. The tree is very productive."

54300. "*Huidobro.* Also known as *Araucana* and *Araucana Huidobro.* This is said to have originated from an Italian seed. The tree is described as very vigorous and productive; the fruit is medium to large, yellow, of firm texture, sweet, aromatic, and juicy. Its ripening season is late autumn (April to May in Chile), and the fruits can be kept in good condition without cold storage until the following October or sometimes November. Its shipping qualities are excellent.

"This variety can not be strongly recommended as a dessert apple and is not introduced as such; immunity from the attacks of the woolly aphis is the quality which gives it interest and makes it valuable in Chile and perhaps elsewhere. Sr. Izquierdo has found that plants of this variety grafted on seedling apple roots will be attacked by the aphis only from the roots upward to the union of stock and scion, not a single insect ever passing on to the scion to carry on his nefarious activities.

"Because of this characteristic, it is possible that *Huidobro* may have value in the United States as a stock plant on which to graft other and better varieties of the apple."

54301. "*Productiva* (productive). A large fruit striped with red, ripening in April and May in central Chile."

54302. "*Citronelle.* A small sweet yellow apple, said to be an excellent keeper."

54303. CRINODENDRON PATAGUA Molina. Elæocarpaceæ. **Patagua.** (*Tricuspidaria dependens* Ruiz and Pav.)

From Kew, England. Cuttings presented by Sir David Prain, director, Royal Botanic Garden. Received September 30, 1921.

A small, compact, rather spreading evergreen tree, 20 to 30 feet high, with elliptic leaves up to 2½ inches long and white axillary flowers nearly an inch long, borne on long curved stalks. The wood is very white and is much used

for carpentry and even for cabinetmaking; the bark is employed in tanning; and silkworms relish the leaves. Native to moist situations in central Chile, where it ascends to nearly 4,000 feet. (Adapted from *Kew Bulletin of Miscellaneous Information, 1907, p. 13*, and *Curtis's Botanical Magazine, pl. 8115.*)

54304. Gladiolus alatus L. Iridaceæ.

From Pretoria, Transvaal, South Africa. Seeds presented by I. B. Pole Evans, chief, Division of Botany. Received September 26, 1921.

A very interesting little South African plant with flowers of a delightful fragrance not unlike that of the sweetbrier; the three upper petals are bright orange-scarlet, the three lower ones are yellowish tipped with orange-scarlet. The bulbs are not larger than ordinary peas and can not remain long out of ground. (Adapted from *Allen, Bulbs and Tuberous-Rooted Plants, p. 105.*)

For previous introduction, see S. P. I. No. 44722.

54305. Paullinia cupana Kunth. Sapindaceæ.

From Para Valley, Para, Brazil. Seeds presented by A. Law Voge, through J. A. McCutchin, Federal Horticultural Board. Received September 16, 1921.

"The seed requires three months to germinate and should be planted in clay soil mixed with sand, half and half. They are very delicate, being killed in two days when exposed to dryness. About 74 per cent of seeds, preserved in water for two weeks, germinated, although fermentation had set in. The plant is naturally a vine, though in commercial plantings in Brazil it is trained as a bush. It requires shade while young. The plant has the highest percentage of caffein of any plant known." (*Voge.*)

From this species is obtained guarana, which is used not only as a remedy for intestinal trouble but also as a very powerful stimulant that enables one to endure almost superhuman fatigue. Guarana is a black paste, extracted from the seeds of the grapelike fruits found growing along the upper Tapajoz, and in the valley of the Orinoco in Venezuela.

In November the fruits mature; the moist soft seeds are carefully removed and spread in the sun to dry. A few hours are sufficient to give them a flinty brittleness. The kernels are then reduced to powder; and, with the addition of a little water or by exposure to the damp air of the swamps, a thick paste is obtained, which is molded into cylinders about an inch in diameter and 6 inches long. The dry cylinder assumes an almost mineral hardness. This is the guarana of commerce. When powdered it ferments rapidly and its medicinal properties come into play.

The Indians also utilize the roots and leaves of the Paullinia for the making of inferior grades of guarana. Even the blossoms are burned and the ashes yield still another variety known as "guarana putira," or "guarana flor." The Indians and whites who use guarana file a small portion from the cylinder, dissolve it in water, and drink it. The whites generally add sugar to neutralize the bitter taste of caffein. The chief medicinal value of guarana is its salutary action on the intestinal secretions when taken in small and not too frequent doses. Repeated doses result in a general breakdown of the nervous system.

Analysis of 100 grams of guarana.

	Grams.
Caffein	5.388
Essential oil	2.950
Resin	7.800
Coloring matter	1.570
Saponin	.060
Guarana-tannic acid	5.902
Pyro-guarana acid	2.750
Starch	9.350
Glucose	.777
Pectic acid, malic acid, dextrin, etc	7.470
Vegetable fiber	49.125
Water	7.650

The young shoots are planted about 20 feet apart, and in the course of 10 years the plant occupies an area of from 10 to 15 square feet. The plants bear fruit in the third or fourth year and will yield from 6 to 8 pounds of seeds, about the size and color of a grain of corn, annually for 35 to 40 years. Plants raised from seed do not bear fruit until the fifth year and live but a few years. (Adapted from *Bulletin of the Pan American Union, vol. 51, p. 268.*)

54306. Clusia grandiflora Splitg. Clusiaceæ.

From Cambridge, England. Cuttings presented by F. G. Preston, superintendent, Botanic Garden. Received September 30, 1921.

A very beautiful plant up to 11 feet high with handsome large white rose-tinted flowers, each from 7 to 8 inches in diameter. The flowers are fleshy with a delicate white fringe around the center of a deep-yellow, discoid, gummy mass of staminodes. Three flowers are usually borne at the end of a shoot, the central one opening first and hiding the two side buds which open later. This native of Guiana has large handsome leathery leaves, up to 18 inches long and over 7 inches wide; they are borne in clusters towards the end of the twigs. The plant is not in any way susceptible to insect pests. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 67, p. 315.*)

54307 and 54308.

From Honolulu, Hawaii. Plants collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received August 26, 1921.

54307. Cola nitida (Vent.) Schott and Endl. Sterculiaceæ.
(*Sterculia nitida* Vent.)

A tree 20 to 30 feet high, native to Upper Guinea, Africa, closely related to the common cola nut, from which it differs in the broader, shorter stalked leaves, and flowers nearly double the size. These trees furnish the cola nuts so much esteemed by the natives for their bitter flavor, and which are said to enhance the taste of whatever is eaten with them. The numerous seeds are in leathery or woody pods. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 221.*)

54308. Quercus javanica (Blume) Drake. Fagaceæ.
(*Castanopsis javanica* A. DC.)

A large evergreen tree with very leathery leaves which are shining above, more or less rufous pubescent beneath, and 3 to 10 inches long. The globose tomentose involucres, up to 2 inches in diameter with spines sometimes two-thirds of an inch long, inclose 1 to 4 nuts. Native to Lower Burma and the Malay Peninsula. (Adapted from *Hooker, Flora of British India, vol. 5, p. 620.*)

54309. Dioscorea esculenta (Lour.) Burkill. Dioscoreaceæ. Lesser yam.

From Suva, Fiji Islands. Tubers presented by C. H. Knowles, Director of Agriculture. Received September 17, 1921.

This small yam, the *kawai*, is certainly worth the attention of anyone who has facilities for cultivating a small area of food plants. Being indigenous to Fiji, the natives have long recognized its value as a food, and it is cultivated in most if not all of the Fiji Islands. It is cultivated in parts of India and Burma. In the latter it is said to be found wild.

The stem of this creeper is round and full of prickles. It is propagated by planting the small tubers or roots, which, like the old ones, are oblong, of a brownish color outside and a pure white within. When cooked, the skin falls off like the bark of a birch tree. The root is very farinaceous, and when well cooked looks like a fine mealy potato, although of superior whiteness. The taste recalls to mind that of the arracacha of South America. There is a slight degree of sweetness about it which is very agreeable to the palate.

The *kawai* can be grown in districts too wet for the finer varieties of the yam, and it is not attacked by the leaf fungus *Gloeosporium postis* which attacks yams, particularly the better varieties, and is very severe in wet years. Good land is necessary for a good crop, and it must be well drained.

No insect pests or fungous diseases were found to damage the plant during 1916 to 1919.

The *kawai* can be either boiled or roasted, and, as with the potato, it is best not to remove the skin before cooking. A thorough cleaning is the only preparation necessary. (Adapted from *Agricultural Circular, Fiji, vol. 1, p. 86.*)

54310. Coix lacryma-jobi ma-yuen (Rom.) Stapf. Poaceæ. Ma-yuen.

From Manila, Philippine Islands. Seeds presented by Sr. Adn. Hernandez, director, Bureau of Agriculture. Received September 23, 1921.

"A newly domesticated variety grown in Occidental Negros Province, Philippine Islands, where no disease is reported." (*Arsenio Goco, plant inspector.*)

"Our experiments have shown this to be a promising cereal for the Tropics." (*Hernandez.*)

For previous introduction, see S. P. I. No. 49798.

54311. Dendrocalamus longispathus Kurz. Poaceæ. Bamboo.

From Dehra Dun, United Provinces, India. Seeds presented by R. S. Hole, forest botanist. Received September 7, 1921.

A large handsome species with tufted glaucous-green culms up to 60 feet high, the upper branches bearing smooth lanceolate yellow-ribbed leaves the under surface of which is rough and glaucescent or sometimes almost white. The internodes are up to 2 feet long with walls 5 inches thick. The species comes nearest *Dendrocalamus hamiltonii* but is easily recognized by its long fragile papery culm sheaths densely hairy on the back, and by the large panicles of small flower heads and blunt spikelets. One of its local Burmese names is "wa-ya" (stinging bamboo), for the hairs on the sheath are especially irritating. Although native to eastern Bengal and Burma, chiefly along streams, it has been cultivated in Calcutta, Malabar, etc., but the culms are not very strong, and as a building material it is generally inferior to many other kinds. (Adapted from *Annals of the Royal Botanic Garden, Calcutta, vol. 7, p. 89.*)

54312 to 54318.

From Jujuy, Argentina. Collected by D. S. Bullock, agricultural trade adviser, Bureau of Markets and Crop Estimates, United States Department of Agriculture. Received September 24, 1921.

54312 to 54315. Solanum tuberosum L. Solanaceæ. **Potato.**

"Tubers bought at Market Place, Jujuy, Argentina, August 1, 1921." (*D. S. Bullock.*)

54312. No. 1. **54314.** No. 3.

54313. No. 2. **54315.** No. 4.

54316. Oxalis tuberosa Molina. Oxalidaceæ. **Oca.**

"Seeds of *papa oca* bought at Market Place, Jujuy, Argentina. Said to grow at an altitude of 9,000 feet." (*D. S. Bullock.*)

54317 and 54318. Zea mays L. Poaceæ. **Corn.**

Seeds introduced for experimental purposes.

54317. No. 1. **54318.** No. 2.

54319. Hydnocarpus wightiana Blume. Flacourtiaceæ.

From Sibpur, near Calcutta, India. Seeds presented by Lieut. Col. A. T. Gage, director, Royal Botanic Garden. Received September 30, 1921.

 ACC49851S

"A tree common on the western Peninsula from the Konkan along the coast ranges of India, 40 to 50 feet high, with smooth ovate to lanceolate leaves, and globose fruits the size of a small apple. The numerous yellowish seeds have oily albumen. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 57.*)

"At present the oil from the seeds is used in Calcutta (School of Tropical Medicine) in the treatment of leprosy." (*J. F. Rock.*)

For previous introduction, see S. P. I. No. 52859.

54320. Rubus sp. Rosaceæ.

From San Salvador, Salvador. Seeds collected by P. H. Dorsett, plant introducer, Department of Agriculture. Received September 30, 1921.

"Seeds secured in the market, San Salvador, September 6, 1921. Cylindric fruits 1½ inches long, 1 inch in diameter, deep maroon in color, with plenty of wine-red juice. Flavor acid but quite pleasant." (*Dorsett.*)

54321. Coleus rotundifolius (Poir.) Cheval. and Perr. Men- (*C. tuberosus* A. Rich.) [thaceæ.

From Mount Silinda, Southern Rhodesia. Tubers presented by W. L. Thompson. Received September 13, 1921.

"Tubers which serve as food for the natives of this district, and of which we often partake. The native name is *zwidata*. The tubers may be described as a substitute for Irish potatoes. We find that they are fine prepared in the same way as creamed potatoes. They are not very mealy but could scarcely be called watery. If they could be induced to grow to a larger size, with increase rather than decrease of other good qualities, I think they might be quite a useful plant. I think they are quite prolific yielders. They require quite a long season to mature, and I presume that, if these reach you in condition to grow, it would be necessary to start them in a greenhouse. The tubers send out sprouts much as do sweet potatoes." (*Thompson.*)

For previous introduction, see S. P. I. No. 51768.

54322 to 54325.

From Alipur, Bengal, India. Seeds presented by the Agricultural and Horticultural Society of India, through E. N. Reasoner, Oneco, Fla. Received September 28, 1921.

54322. Cassia alata L. Cæsalpiniaceæ.

A coarse erect branched shrub 5 to 10 feet high, with stout green branches and pinnate leaves up to 2 feet long. The yellow flowers, 1½ inches wide, are in racemes 4 to 20 inches long. The valves of the straight spreading pods have a papery wing running from end to end. The active principle of the seeds is chrysophanic acid. Every portion of the plant is used medicinally. The plant is native to tropical America but is now cultivated all over the Tropics. (Adapted from *Rock, Leguminous Plants of Hawaii, p. 83.*)

For previous introduction, see S. P. I. No. 49989.

54323. Dioclea lasiocarpa Mart. Fabaceæ.

A shrubby plant twining over tall trees, with sparsely pubescent trifoliolate leaves, the somewhat-pointed leaflets 2 to 5 inches long. The purple-violet flowers, with fringed keel and papery deciduous bractlets, are on peduncles 1 to 1½ feet long. Native to tropical American forests. (Adapted from *Martius, Flora Brasiliensis, vol. 15, pt. 1, p. 166.*)

54324. Ochna squarrosa L. Ochnaceæ.

A shrub or small tree with smooth shining leaves 2 to 5 inches long and fragrant yellow flowers an inch long, clustered on the old wood or on short leafless branchlets. The compound drupaceous fruits are black. Native to the East Indies and Burma. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 196.*)

54322 to 54325—Continued.

54325. PETREA VOLUBILIS L. Verbenaceæ.

"A woody climber of exquisite beauty when in full flower. The heliotrope violet-centered blossoms are borne in loose pendent sprays which hang gracefully from the slender arching branches. These, combined with the rigid green leaves, suggest almost an artificial blossom. Native to tropical South America and some of the West Indies." (*H. F. Macmillan.*)

54326. AVENA SATIVA L. Poaceæ. **Oats.**

From Edinburgh, Scotland. Seeds presented by George Sinclair, manager, Earl of Roseberry's Dalmeny farms. Received September 30, 1921.

"*Scotch Newmarket* oats which by breeding have been increased to a yield of 100 bushels per acre and a weight of 56 pounds per bushel." (*Lou D. Sweet, Denver, Colo.*)

54327 to 54329. NAGEIA spp. Taxaceæ. **Yellowwood.**

(*Podocarpus* spp.)

From Pretoria, Union of South Africa. Seeds presented by E. Percy Phillips, division of botany. Received September 29, 1921.

"I am sending seeds of species of South African yellowwoods which may interest you. As the genus is now under revision at Kew, the Herbarium numbers of the forestry department should be kept, as they will be quoted in the monograph when published." (*Phillips.*)

54327. NAGEIA sp.
Herbarium No. 3467.

54328. NAGEIA sp.
Herbarium No. 3466.

54329. NAGEIA sp.
Herbarium No. 3392.

54330. CARICA PAPAYA L. Papayaceæ. **Papaya.**

From Canal Zone. Seeds collected by Dr. David Fairchild, Agricultural Explorer in Charge of the Office of Foreign Seed and Plant Introduction. Received September 16, 1921.

"An oblong-fruited form of exquisite flavor. Grown in the plantations of the Government at Bracho Mindi and served in the hotels of the Panama Railway Co." (*Fairchild.*)

54331. CENTAUREA RAGUSINA L. Asteraceæ.

From Chemin des Grottes St. Helene, Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received September 26, 1921.

"A strikingly ornamental long-lived plant. I have two nearly 30 years old, growing on a perpendicular wall. Very few good seeds are produced and germination seems difficult; any stagnant moisture should be avoided. It is best to mix the seeds with soil, spread the mixture out in a fissure of a rock and keep slightly moist." (*Proschowsky.*)

For previous introduction, see S. P. I. No. 48027.

54332. OCHROMA LAGOPUS Swartz. Bombacaceæ. **Balsa.**

From Camaguey, Cuba. Seeds presented by Dr. R. L. Luaces, director, Granja Escuela. Received September 23, 1921.

"Seeds from this spring's crop. The seeds are very small and embedded in the lint, which is a silk cotton that does not absorb water, and for this reason it is used for life belts. The wood of the tree is stronger and much lighter than basswood and is being used in aeroplane construction. I believe it will grow well in southern Florida, around Brownsville, Tex., and in parts of California." (*Luaces.*)

For previous introduction, see S. P. I. No. 53490.

54333 to 54335. ANDROPOGON spp. Poaceæ. Beard-grass.

From Loanda, Angola, Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mission, Malanzhe, Angola. Received September 16, 1921.

"Grasses of Angola, which may be useful for forage." (*Longworth.*)

54333. ANDROPOGON FASTIGIATUS Swartz.

A slender erect smooth annual with flat narrow leaves. The freely branching culms bear broad racemes with conspicuous sterile spikelets and geniculate awns about 1½ inches long. Native to dry open ground from southern Mexico and the West Indies to Brazil. (Adapted from *Contributions from the National Herbarium, vol. 18, p. 279.*)

54334. ANDROPOGON GAYANUS Kunth.

A tall perennial with numerous flowering branches, rather stout racemes of reddish or brownish spikelets, and awns about an inch long bent in the middle. Native to Senegal. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 9, pt. 2, p. 261.*)

54335. ANDROPOGON sp.

Received as *Andropogon annulatus.*

54336 to 54341. ORYZA SATIVA L. Poaceæ. Rice.

From Saigon, Cochin China. Seeds presented by M. E. Carle, director, Laboratoire de Genetique, Institut Scientifique de l'Indochine. Received September 13, 1921. Notes adapted from *Bulletin Agricole, de l'Institut Scientifique de Saigon, vol. 2.*

54336. *Cadung.* A variety of the Gocong type, a fine grain maturing January 30, after a growing period of 152 days. Yield 1,652 kilograms per hectare (1,475 pounds per acre). (*P. 43.*)

54337. *Cadung-da.* Sown on June 14, flowered December 25, harvested March 7, after about 266 days of growth. Yield 1,080 kilograms per hectare (900 pounds per acre). (*P. 41.*)

54338. *Cadung Vinhlong.* A variety of the Gocong type. Maturity is February 17 to 25, after a growing season of 183 to 235 days from the date of sowing. The yield is 1,664 to 3,600 kilograms per hectare (1,485 to 3,213 pounds per acre). (*P. 42.*)

54339. *Tam. vuôc.* Of the Gocong type. The growing period is 164 to 179 days, and the yield 1,117 to 1,304 kilograms per hectare (997 to 1,165 pounds per acre). (*P. 42.*)

54340. *Tau chén.*

54341. *Tra bac.*

54342 and 54343. ECHINOCHLOA PYRAMIDALIS (Lam.) Hitchc. and Chase. Poaceæ. Grass.

(*Panicum pyramidale* Lam.)

From Loanda, Angola, Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mission, Malanzhe, Angola. Received September 16, 1921.

"Grasses of Angola, which may be useful for forage." (*Longworth.*)

A smooth, sparingly branched, somewhat fleshy annual 7 feet tall, with elongate leaves and a long tapering panicle, the relatively slender branches ascending or slightly drooping. (Adapted from *Contributions from the National Herbarium, vol. 18, p. 345.*)

For previous introduction, see S. P. I. No. 51941.

54342. "An aquatic form 3 meters (10 feet) in height." (*Gossweiler.*)

54343. "A rhizomatous aquatic or semiaquatic form, up to 4 meters (13 feet) in height." (*Gossweiler.*)

54344. Oryza sativa L. Poaceæ. **Rice.**

From Saigon, Cochin China. Seeds presented by M. E. Carle, director, Laboratoire de Genetique, Institut Scientifique de l'Indochine. Received September 13, 1921.

Luá chua chan.

54345. Echinochloa haploclada Stapf. Poaceæ. **Grass.**

From Loanda, Angola, Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mission, Malanzhe, Angola. Received September 16, 1921.

A tufted perennial up to 8 feet high, native to Nile land and Mozambique. The linear leaves are 6 inches to over a foot long, and the dense erect linear to linear-oblong panicles are 4 to 9 inches long. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 9, p. 613.*)

54346 and 54347. Oryza sativa L. Poaceæ. **Rice.**

From Saigon, Cochin China. Seeds presented by M. E. Carle, director, Laboratoire de Genetique, Institut Scientifique de l'Indochine. Received September 13, 1921.

54346. *Nango.* A fine variety with somewhat elongated grain, of the Gocong type. After a growing period of 159 days it matures about January 8, with a yield of 1,496 kilograms per hectare (1,335 pounds per acre). (Adapted from *Bulletin Agricole de l'Institut Scientifique de Saigon, vol. 2, p. 43.*)

54347. *Nangngoc.* A variety with a normal growing period of 119 to 151 days usually 122 days. The normal yield is 2,000 kilograms per hectare (1,785 pounds per acre). (Adapted from *Bulletin Agricole de l'Institut Scientifique de Saigon, vol. 2, p. 41.*)

54348. Oryza sativa L. Poaceæ. **Rice.**

From Loanda, Angola, Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mission, Malanzhe, Angola. Received September 16, 1921.

"Rootstock tufted, culms numerous, up to 2 meters (7 feet) high. Found with *Echinochloa stagnina* and *E. pyramidalis* in swamps which contain stagnant water up to the time of maturity of the rice. Native to the swampy margins of River Longa, Quissama, Cuanza Sul, Angola. Matures towards July." (*Gossweiler.*)

54349. Oryza sativa L. Poaceæ. **Rice.**

From Saigon, Cochin China. Seeds presented by M. E. Carle, director, Laboratoire de Genetique, Institut Scientifique de l'Indochine. Received September 13, 1921.

Ra xanh. A variety originated at Dinhthoi, Cantho, very productive, but with a small short grain. The yield is from 1,769 to 3,859 kilos per hectare (1,579 to 3,444 pounds per acre) with a growing period of 202 to 218 days. Ripens February 19 to 21. (Adapted from *Bulletin Agricole de l'Institut Scientifique de Saigon, vol. 2, p. 41.*)

54350 to 54352. Panicum spp. Poaceæ. **Panic grass.**

From Loanda, Angola, Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mission, Malanzhe, Angola. Received September 16, 1921.

"Grasses of Angola, which may be useful for forage." (*Longworth.*)

54350. Panicum maximum Forsk.

"A robust perennial 6 feet or more tall, with short rootstocks growing in immense leafy clumps. The open panicles about a foot long bear numerous smooth, rather small oblong spikelets. Native to Guadeloupe." (*Agnes Chase.*)

For previous introduction, see S. P. I. No. 53956.

54350 to 54352—Continued.

54351. PANICUM MUTICUM Forsk.

"An annual or perennial, semiaquatic grass 1.5 meters (5 feet) in height. Native to Egypt and Arabia." (*Gossweiler.*)

54352. PANICUM sp.

"An erect annual up to 2.5 meters (8 feet) in height." (*Gossweiller.*)

Received as *Panicum synnertonii*, but the seeds received are not this species.

54353 to 54384.

From Chengtu, Szechwan, China. Seeds presented by P. M. Bayne, through J. Burtt Davy, Cambridge, England. Received September 19, 1921.

The only notes received with this shipment were the native names of the various seeds in Chinese characters. These were translated by Dr. T. Tanaka, of the Office of Crop Physiology and Breeding Investigations.

54353. AKEBIA LOBATA AUSTRALIS Diels. Lardizabalaceæ.

"(No. 20.) Eight-month *kua.*"

54354. BETA VULGARIS L. Chenopodiaceæ. **Beet.**

"(No. 60.) Thick-skinned vegetable."

54355. BRASSICA JUNCEA (L.) Cass. Brassicaceæ. **Chinese mustard.**

"(No. 58.) Blue (green) vegetable."

54356. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

"(No. 59.) Large *Pai ts'ai.*"

54357. BRASSICA sp. Brassicaceæ.

"(No. 50.) Water lily, flower white (some special name; can not be white-flowered water lily from etymology)."

54358. BRASSICA sp. Brassicaceæ.

"(No. 52.) Pink oil vegetable seed."

54359. BRASSICA sp. Brassicaceæ.

"(No. 61.) Large-headed vegetable."

54360. CACARA EROSA (L.) Kuntze. Fabaceæ. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

"(No. 21.) Earth *kua* fruit."

54361. CANNABIS SATIVA L. Moraceæ. **Hemp.**

"(No. 95.) *Hua ma tsu.* Fire hempseed."

54362. CROTALARIA sp. Fabaceæ.

"(No. 91.) Noisy-bell herb."

54363. CHAETOCHLOA ITALICA (L.) Scribn. Poaceæ. **Millet.**
(*Setaria italica* Beauv.)

"(No. 88.) Pink valley seed."

54364. FAGOPYRUM VULGARE Hill. Polygonaceæ. **Buckwheat.**

"(No. 63.) *Ch'iao tsu.*"

54365. HELIANTHUS ANNUUS L. Asteraceæ. **Sunflower.**

"(No. 22.) Sun-pointing *ki* (very common name for sunflower)."

54366. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"(No. 100.) Greasy fruit."

54353 to 54384—Continued.

54367. PERILLA FRUTESCENS (L.) Britton. Menthaceæ.
(*P. ocymoides* L.)

"(No. 87.) *Su ma.*"

54368. PERISTROPHE TINCTORIA Nees. Acanthaceæ.

"(No. 92.) *Chih chia hua.*"

54369. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ. **Adsuki bean.**

"(No. 41.) *Hung tou* or pink *tou.*"

54370. PHASEOLUS AUREUS Roxb. Fabaceæ. **Mung bean.**

"(No. 42.) *Lu tou* or green *tou.*"

54371 and 54372. PHASEOLUS CALCARATUS Roxb. Fabaceæ. **Rice bean.**

54371. "(No. 32.) Pink Pa-mountain *tou.*"

54372. "(No. 33.) Yellow Pa-mountain *tou.*"

54373. ROHDEA JAPONICA Roth. Convallariaceæ.

"(No. 93.) Myriad-years blue (very common name.)"

54374 to 54379. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

54374. "(No. 34.) Large yellow *tou.*"

54375. "(No. 35.) Large black *tou.*"

54376. "(No. 36.) Parm-skin large *tou* (large tou is soy bean)."

54377. "(No. 37.) Blue (green) skin large *tou.*"

54378. "(No. 39.) Small black *tou.*"

54379. "(No. 40.) Small yellow *tou.*"

54380. SPINACIA OLERACEA L. Chenopodiaceæ. **Spinach.**

"(No. 72.) *P'o ts'ai.*"

54381. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ. **Yard-Long bean.**

"(No. 26.) Linear berry *tou.*"

54382. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"(No. 25.) White dewberry *tou.*"

54383 and 54384. ZEA MAYS L. Poaceæ. **Corn.**

54383. "(No. 82.) Horse-teeth jewel *mai* (barley, wheat, etc., called *mai*)."

54384. "(No. 83.) Yellow jewel *mai.*"

54385 to 54395.

From Avondale, Auckland, New Zealand. Seedlings presented by H. R. Wright. Received September 17, 1921. Quoted notes by Mr. Wright.

54385. MALUS SYLVESTRIS Mill. Malaceæ. **Apple.**
(*Pyrus malus* L.)

"No. 7. Root grafts, second-generation seedling from *Irish Peach.* This seedling is aphis resistant and has a perfect affinity for the Chinese crab, *Pyrus prunifolia.* I am using it for double working, for all those that will not do direct on prunifolia."

For previous introduction, see S. P. I. No. 31519.

54385 to 54395—Continued.

54386. MALUS PUMILA Mill. Malaceæ. **Paradise apple.**

"No. 8. Root grafts, aphis-resistant *Paradise*, used as a dwarfing stock."

For previous introduction, see S. P I. No. 42638.

54387 to 54392. MALUS SYLVESTRIS Mill. Malaceæ. **Apple.**
(*Pyrus malus* L.)

54387. "No. 1. *Bordeaux Reinette.* New blight-proof apple, resembling *Cox's Orange* in color and shape, with a rich aromatic flavor; fruit a good keeper, making an ideal apple for home or export; heavy cropper."

54388. "No. 3. Root grafts, *Delicious* × *Cox's Orange* cross, nearly aphis resistant; a beautiful apple; an early and heavy cropper of superb quality."

54389. "No. 6. Root grafts, *Imm's Seedling.* A large culinary apple, one of the very best for that purpose; good cropper, and aphis resistant. A most promising stock; of upright growth, with very large foliage and a splendid root system."

54390. "No. 2. *Keaney's Winter;* has proved aphis resistant with me."

54391. "No. 3. Plants on own roots, grown from root cuttings of *Ribston Pippin* × *Northern Spy*, cross not yet named; aphis resistant. A superb keeper with a delicious flavor."

54392. "No. 4. A sport from the *Ribston-Spy* cross, differing only in its most peculiar color; aphis resistant. Flavor and keeping qualities superb."

54393. PRUNUS DOMESTICA L. Amygdalaceæ. **Prune.**

"No. 9. A very large black prune, early ripening, before *Petite d'Agen;* should be valuable."

54394. PRUNUS SALICINA × CERASIFERA. Amygdalaceæ. **Hybrid plum.**

"No. 11. An enormous cropper and good shipper; splendid for jam and bottling; a valuable commercial fruit, should be planted largely."

54395. PRUNUS SALICINA × CERASIFERA. Amygdalaceæ. **Hybrid plum.**

"No. 10. *Wright's Hybrid Cherry* plum × *Wright's Early Jap*, cross like cherry plum (*Prunus cerasifera*) in appearance, but larger; good alike for jam, bottling, and dessert. The tree is very upright in growth and should make a good hedge."

54396 to 54399. ARISTIDA spp. Poaceæ. **Grass.**

From Loanda, Angola Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mision, Malanzhe, Angola. Received September 16, 1921.

"Grasses of Angola found in the arid coast region and might be useful for forage in arid conditions in the United States." (*Longworth.*)

54396. ARISTIDA ADSCENSIONIS L.

"A tufted weedy annual 6 to 12 inches tall, with dense narrow panicles; the awns of the crowded spikelets are horizontally spreading." (*Agnes Chase.*)

For previous introduction, see S. P. I. No. 15334.

54397. ARISTIDA HORDEACEA Kunth.

"An annual about a foot tall, bent at the lower joints, with bushy barleylike heads about 3 or 4 inches long." (*Agnes Chase.*)

54396 to 54399—Continued.

54398. ARISTIDA PAPPOSA Trin. and Rupr.

A grayish species native to Nubia and Senegal, with smooth culms a foot or more long. The narrow rolled leaves are 3 to 6 inches long, the narrow oblong panicles 4 to 5 inches long with erect somewhat appressed branches. The awns are feathery above the middle. (Adapted from *Steudel, Synopsis Plantarum Graminearum, p. 144.*)

54399. ARISTIDA sp.

Received as *Aristida rhiniochloa* (?).

54400 to 54406.

From Loanda, Angola, Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mission, Malanzhe, Angola. Received September 16, 1921.

"Grasses of Angola which may be useful for forage."

54400. CAPRIOLA DACTYLON (L.) Kuntze. Poaceæ. Bermuda grass. (*Cynodon dactylon* Pers.)

"Found in the arid coast region and might be useful for arid conditions in the United States." (*Longworth.*)

For previous introduction, see S. P. I. No. 51335.

54401. STREPTOLOPHUS SAGITTIFOLIUS Hughes. Poaceæ.

"A tropical African annual much branched from the base. A rare grass." (*Gossweiler.*)

"Freely branching, decumbent, the blades conspicuously sagitttate on slender petioles spreading from the sheaths; inflorescence of rather long-stalked burs." (*Agnes Chase.*)

54402. ENTEROPOGON MELICOIDES (Kœnig) Nees. Poaceæ.

"Found in the arid coast region and might be useful for arid conditions in the United States." (*Longworth.*)

"A tall slender perennial with narrow leaves and a one-sided spike of crowded awned spikelets." (*Agnes Chase.*)

54403. ERAGROSTIS CHAPELLIERI (Kunth) Nees. Poaceæ.

"A wiry perennial 2 to 3 feet tall, with narrow leaves and russet-colored narrow panicles 2 to 6 inches long. Native to Madagascar." (*Agnes Chase.*)

54404. ERAGROSTIS FASCICULARIS Trin. Poaceæ.

A densely tufted species with strong roots, native to the Guinea Coast. The culms bear distant clusters of straight branches. The smooth leaves are narrow and rolled, and the panicles are narrow and dense. (Adapted from *Steudel, Synopsis Plantarum Graminearum, p. 270.*)

54405. NAZIA ALIENA (Spreng.) Scribn. Poaceæ.

"Found in the arid coast region and might be useful for arid conditions in the United States." (*Longworth.*)

"A low annual with rather short, broad, conspicuously ciliate leaves and spikes 1 to 4 inches long of minute burs, the bur falling entire." (*Agnes Chase.*)

54406. VETIVERIA NIGRITANA (Benth.) Stapf. Poaceæ.

"A robust perennial growing in clumps, with elongate panicles of slender whorled branches with prickly spikelets toward the ends. Differs from the common species in having delicate awns." (*Agnes Chase.*)

54407 to 54409.

From Chengtu, Szechwan, China. Seeds presented by P. M. Bayne, through J. Burtt Davy, Cambridge, England. Received September 19, 1921.

The only notes received with these seeds were the native names in Chinese characters. These were translated by Dr. T. Tanaka, of the Office of Crop Physiology and Breeding Investigations.

54407. AMARANTHUS PANICULATUS L. Amaranthaceæ.

No. 86. "Savage's chestnut."

54408. CUCURBITA sp. Cucurbitaceæ.

No. 12. "Winter *kua*."

54409. IPOMOEA REPTANS (L.) Poir. Convolvulaceæ. (*I. aquatica* Forsk.)

No. 49. "*Yung* vegetable."

54410. ZEA MAYS L. Poaceæ. Corn.

From Supe, Peru. Seeds presented by Thomas W. Voetter, American consul. Received September 16, 1921.

"In December, 1919, I obtained an ear of corn at Supe, Peru. Part of this was planted at Antofagasta, Chile, and gave very satisfactory results. The plant grew very tall, and on some of the stalks four ears appeared. The ears were long and the grains tender, juicy, and sweet.

"Some of the grains from the original ear were sent to Fort Wayne, Ind., and planted there in 1920, but no ears formed there before the coming of frost. It is evident that this variety needs a long growing season and might do very well and prove very satisfactory in some southern State." (*Thomas W. Voetter.*)

54411 to 54424. BRASSICA spp. Brassicaceæ.

From Okitsu, Shizuokaken, Japan. Seeds presented by Dr. T. Onda, director, Imperial Horticultural Experiment Station, through T. Ito, chief, Plant Industry Division, Imperial University of Agriculture and Commerce, Tokyo. Received September 30, 1921.

New and rare types of salad plants and green vegetables, etc. Notes adapted from Inouma, Japanese Mustards; translated by T. Tanaka, of the Office of Crop Physiology and Breeding Investigations.

54411. *Hatakena* (farm vegetable), from Kyoto Province, much resembles *aburana*, the common oil vegetable, but is paler. It is commonly used as a kind of salad. The yellow flowers are three-quarters of an inch across and bear four light-green honey glands. The radical leaves resemble those of daikon (*Raphanus sativus*). The many-seeded pods are 4½ inches long.

54412. *Hinona* (vegetable of Hino), from Shigaken. A plant produced in the village of Hino, Omi Province, with leaves like *aburana* and a little longer, the larger veins showing reddish purple. The root, 5 to 7 inches in circumference and 7 to 8 inches long, is a beautiful purplish red. The yellow petals are rounder than those of *aburana*.

54413 to 54415. A variety with sparingly incised leaves and white stalk called *Mibuna* from the name of the village where it originated, in the vicinity of Kyoto. The leaves are soft and of good flavor and are highly esteemed.

54413. *Mibuna* (common).

54414. *Mibuna, okute* (late).

54415. *Mibuna, wase* (early).

54411 to 54424—Continued.

54416 to 54419. *Midzuna* (water vegetable). A variety with several hundred tufted leaves growing from one root; several flower stalks grow up between the leaves. In general character the plant resembles *aburana* except that the deeply incised serrate leaves are more slender and the small slender pods are round instead of flat. This variety is commonly planted in Mino Province and is called *seneuzi* (thousand fibers) in the city of Kyoto.

54416. *Midzuna, nakate* (midseason).

54417 and 54418. *Midzuna, okute.* A large coarse variety of *midzuna* which is planted in autumn. The leaves are deeply incised but not so slender as those of the common *midzuna.* It tastes slightly bitter like *midzuna* but is without the disagreeable odor of *takana.*

54417. *Midzuna, okute* (late).

54418. *Midzuma, okute dai* (late and large).

54419. *Midzuna, wase* (early).

54420. *Suigukina.* A variety extensively cultivated at Kamo Village, Yamashiro Province, and mostly used to make "aemono" (mixed salad). The plant is similar to *aburana* except that the radical leaves somewhat resemble those of *midzuna* and the stem leaves have much deeper incisions. The yellow flowers are 1¼ inches across.

54421 to 54424. *Takana.*

54421. *Takana* (common). A plant 3 to 4 feet high, with large stiff blunt-tipped leaves. In spring the stems and leaves are picked and eaten, therefore the name *kakina* (picked vegetable) or *takana.* It has a pungent taste and when boiled has a bad odor. The flowering season follows the ordinary *karashina.*

54422. *Takana, katsnona* (especially delicious one). For description, see S. P. I. No. 54421.

54423. *Takana, murasaki* (purple variety). Similar in general appearance to *takana* (common) but with incised sharply serrate leaves of a purplish color. The taste is less pungent than that of *takana.*

54424. *Takana, shiro* (white). For description, see S. P. I. No. 54421.

54425. Holcus sorghum L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

From Mongalla, Anglo-Egyptian Sudan. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received December 9, 1920. Numbered September, 1921.

"(No. 1488. Mongalla, Anglo-Egyptian Sudan. August 8, 1920.) Dark hull, not awned." (*Shantz.*)

INDEX OF COMMON AND SCIENTIFIC NAMES.

Acorn, *Dioscorea latifolia*, 53925, 54054.
Akebia lobata australis, 54353.
Allium fistulosum, 53958.
Amaranth. See *Amaranthus* spp.
Amaranthus gangeticus, 53896.
paniculatus, 53897, 54407.
Ananas sativus, 53990.
Andropogon sp., 54335.
fastigiatus, 54333.
gayanus, 54334.
Anthyllis vulneraria, 53920.
Apple, *Malus sylvestris*:
Admirable de Otoño, 54299.
Bordeaux Reinette, 54387.
Citronelle, 54302.
Delicious × Cox's Orange, 54388.
Huidobro, 54300.
Imm's Seedling, 54389.
Irish Peach, 54385.
Keaney's Winter, 54390.
Productiva, 54301.
Ribston Pippin × Northern Spy, 54391.
Spy, 54392.
Apple, crab, *Malus* spp., 54082–54094. 54266–54268.
Paradise, *Malus pumila*, 54386.
Aristida sp., 54399.
adscensionis, 54396.
hordeacea, 54397.
papposa, 54398.
Attalea cohune, 54017.
Avena sativa, 54326.
Avocado, *Persea americana*:
Capac, 54276.
Carchi, 54273.
Chota, 54272.
Egas, 54271.
Huira, 54278.
Inca, 54277.
Imbabura, 54275.
Irumina, 54274.
Tamayo, 54270.

Balsa, *Ochroma lagopus*, 54332.
Bamboo, *Dendrocalamus* spp., 53909, 54045, 54311.
Barberry, *Berberis* spp., 54061–54074, 54269.
Bean, adsuki, *Phaseolus angularis*, 54369.
common, *Phaseolus vulgaris*, 53969.
Lima, *Phaseolus lunatus*, 54053.
mung, *Phaseolus aureus*, 54370,
rice, *Phaseolus calcaratus*, 54371–54372.
Bean, soy, *Soja max*, 53930–53939, 53987, 54374–54379.
yam, *Cacara erosa*, 54360.
Yard-Long, *Vigna sesquipedalis*, 54381.
Beet, *Beta vulgaris*, 53959, 54354.
Berberis aggregata, 54061
amurensis, 54062.
japonica, 54063.
brachypoda, 54064.
dictyophylla, 54065.
dielsiana, 54066.
gilgiana, 54067
henryana, 54068.
koreana 54069.
lucida, 54070.
quinduensis, 54269.
serotina, 54071.
sieboldii, 54072.
thunbergii maximowiczii, 54073.
vernae, 54074.
Beta vulgaris, 53959, 54354.
Blackberry, *Rubus adenotrichos*, 53995, 54279, 54280.
Black medic, *Medicago lupulina*, 53981.
Brassica spp., 53962–53966, 53974, 54357–54359, 54411–54424.
juncea, 53960, 54355.
pekinensis, 53961, 54356.
Buckwheat, *Fagopyrum vulgare*, 54364.
Burnet, *Sanguisorba minor*, 53921.

Cacara erosa, 54360.
Canna edulis, 53944,
Cannabis sativa, 54361.
Capriola dactylon, 54400.
Capsicum annuum, 53941–53943.
Carica papaya, 54330.
Carissa carandas, 54043.
Casimiroa sp., 54046.
edulis, 54051.
Cassia sp., 54037.
alata, 54322.
tomentosa, 54036.
Castanopsis javanica. See *Quercus javanica*.
Catalpa bungei, 53989.
Centaurea canariensis, 53910.
ragusina, 53911, 54331.
Chaetochloa italica, 53947, 53948, 54363.
Chenopodium album, 53898.
Chih chia hua, *Peristrophe tinctoria*, 54368.
Chrysanthemum coronarium, 53967.

Citrus sp., 53955.
Clitoria ternatea, 53988.
Clover, cluster, *Trifolium glomeratum*, 53985.
Sicilian, *Trifolium panormitanum*, 54032.
strawberry, *Trifolium fragiferum*, 53913.
subterranean, *Trifolium subterraneum*, 53914.
white, *Trifolium repens*, 53912.
Clusia grandiflora, 54306.
Coconut, *Cocos nucifera*, 53922.
Cocos nucifera, 53922.
Cohune, *Attalea cohune*, 54017.
Coix lacryma-jobi ma-yuen, 54310.
Cola nitida, 54307.
Coleus rotundifolius, 54321.
tuberosus. See *C. rotundifolius*.
Colocasia esculenta, 53980.
Corn, *Zea mays*, 54317, 54318, 54383, 54384, 54410.
Cotoneaster dielsiana, 54075.
foveolata, 54076.
Couepia sp., 53929.
floccosa, 54050.
Cowpea, *Vigna sinensis*, 54382.
Crab apple, *Malus* spp., 54082–54094, 54266–54268.
wild, *Malus coronaria*, 54268.
Crataegus arkansana, 54077.
coccinioides, 54164.
dawsoniana, 54079.
lavallei, 54078.
nitida, 54080.
prunifolia, 54081.
Crinodendron patagua, 54303.
Crotalaria spp., 53926, 53927, 54362.
Cucumber, *Cucumis sativus*, 53968.
Cucumis melo, 53899–53901.
sativus, 53968.
Cucurbita sp., 54408.
Currant, *Ribes* sp., 53994.
Cynodon dactylon. See *Capriola dactylon*.

Datura rosei, 54049.
suaveolens, 53919.
Dendrocalamus hamiltonii, 53909.
longispathus, 54045, 54311.
Dioclea lasiocarpa, 54323.
Dioscorea alata, 54057.
batatas, 54048.
esculenta, 53924, 54055, 54309.
latifolia, 53925, 54054.
trifida, 53996, 54056.
Diospyros lycopersicon, 54047.

Echinochloa haploclada, 54345.
pyramidalis, 54342, 54343.
Eggplant, *Solanum melongena*, 53977.
Elaeis guineensis, 54039, 54040.
Enteropogon melicoides, 54402.
Eragrostis chapellieri, 54403.
fascicularis, 54404.
Fagopyrum vulgare, 54364.
Fountain tree, *Spathodea campanulata*, 53983.
Fuchsia sp., 53991.

Ginger, *Zinziber* sp., 53946.
Gladiolus alatus, 54304.
Glycine hispida. See *Soja max*.
Gourd, *Luffa* spp., 53902, 53903.
Grass, beard, *Andropogon* spp., 54333–54335.
Bermuda, *Capriola dactylon*, 54400.
buffels, *Panicum maximum*, 53956.
Enteropogon, melicoides, 54402.
guinea, *Panicum maximum*, 53956, 54350.
kangaroo, *Themeda triandra*, 54044.
Nazia aliena, 54405.
panic, *Panicum* spp., 54350–54352.
Streptolophus sagittifolius, 54401.
Urochloa brachyura, 53957.
Vetiveria nigritana, 54406.
See also *Aristida* spp., *Echinochloa* spp., and *Eragrostis* spp.

Hawthorn, *Crataegus* spp., 54077–54081, 54164.
Helianthus annuus, 54365.
Hemp, *Cannabis sativa*, 54361.
Hippeastrum rutilum, 54042.
Holcus sorghum, 54366, 54425.
Honeysuckle, *Lonicera syringantha*, 54058.
Huantuc, *Datura* sp., 54049.
Hung-tou mu, *Ormosia hosiei*, 54033.
Hydnocarpus wightiana, 54319.

Ipomoea aquatica. See *I. reptans*.
ficifolia, 54038.
reptans, 54409.

Karanda, *Carissa carandas*, 54043.

Leptospermum scoparium nichollii, 53928.
Lonicera syringantha, 54058.
Luffa acutangula, 53902.
cylindrica, 53903.
aegyptiaca. See *L. cylindrica*.
Lycopersicon esculentum, 53940, 53951–53954, 53984.

Malus sp., 54267.
arnoldiana, 54082.
baccata, 54266.
jackii, 54083.
coronaria, 54268.
ioensis, 54084.
micromalus, 54085.
prunifolia rinki, 54086.
pumila, 54386.
robusta, 54087.
sargentii, 54088.
scheideckeri, 54089.

Malus sieboldii arborescens, 54090.
sylvestris, 54299–54302, 54385, 54387–54392.
theifera, 54091.
transitoria toringoides, 54092.
zumi, 54093, 54094.
Mangifera indica, 54041.
Mango, *Mangifera indica*, 54041.
Ma-yuen, *Coix lacryma-jobi ma-yuen*, 54310.
Medicago lupulina, 53981.
Millet, *Chaetochloa italica*, 53947, 53948, 54363.
Mirabilis jalapa, 53904.
Morning-glory, *Ipomoea ficifolia*, 54038.
Mortiño, *Vaccinium floribundum*, 54281.
Muskmelon, *Cucumis melo*, 53899–53901.
Mustard, *Brassica* spp., 53962–53966, 53974.
Chinese, *Brassica juncea*, 53960, 54355.
Myrica rubra, 53982.

Nageia spp. 54327–54329.
Nazia aliena, 54405.

Oats, *Avena sativa*, 54326.
Oca, *Oxalis tuberosa*, 54316.
Ochna squarrosa, 54324.
Ochroma lagopus, 54332.
Ocimum sanctum. See *O. tenuiflorum*.
tenuiflorum, 53905.
Onion, Welch, *Allium fistulosum*, 53958.
Ormosia hosiei, 54033.
Oryza sativa, 53978, 54282–54296, 54336–54341, 54344, 54346–54349.
Oxalis tuberosa, 54316.

Pachyrhizus angulatus. See *Cacara erosa*.
Pai ts'ai, *Brassica pekinensis*, 53961, 54356.
Palm, coconut, *Cocos nucifera*, 53922.
cohune, *Attalea cohune*, 54017.
nikau, *Rhopalostylis sapida*, 54298.
oil, *Elaeis guineensis*, 54039, 54040.
Panicum sp., 54352.
maximum, 53956, 54350.
muticum, 54351.
pyramidale. See *Echinochloa pyramidalis*.
Papaya, *Carica papaya*, 54330.
Passiflora ligularis, 54035.
macrocarpa, 54034.
Patagua, *Crinodendron patagua*, 54303.
Paullinia cupana, 54305.
Pea, field, *Pisum arvense*, 53970.
garden, *Pisum sativum*, 53917.
Pear, *Pyrus* spp., 54095–54103.
Pepper, red, *Capsicum annuum*, 53941–53943.
Perilla frutescens, 54367.
ocymoides. See *P. frutescens*.
Peristrophe tinctoria, 54368.
Persea americana, 54270–54278.
gratissima. See *P. americana*.
Petrea volubilis, 54325.
Phaseolus angularis, 54369.
aureus, 54370.
calcaratus, 54371, 54372.
lunatus, 54053.
vulgaris, 53969.
Phleum pratense, 53986.
Pineapple, *Ananas sativus*, 53990.
Pisum arvense, 53970.
sativum, 53917.
Plum, *Prunus glandulosa*, 54028.
hybrid, *P. salicina* × *cerasifera*, 54394, 54395.
Podocarpus spp. See *Nageia* spp.
Polyalthia longifolia, 53923.
Potato, *Solanum* spp., 54059, 54060, 54312–54315.
Poterium sanguisorba. See *Sanguisorba minor*.
Prune, *Prunus domestica*, 54393.
Prunus domestica, 54393.
glandulosa, 54028.
salicina × *cerasifera*, 54394, 54395.
Pyrus baccata. See *Malus baccata*.
betulaefolia, 54095.
calleryana, 54096.
graciliflora, 54097.
tomentella, 54098.
coronaria. See *Malus coronaria*.
malus. See *Malus sylvestris*.
michauxii, 54099.
nivalis, 54100.
phaeocarpa globosa, 54101.
salicifolia, 54102.
serrulata, 54103.

Quercus javanica, 54308.

Radish, *Raphanus sativus*, 53971–53973, 53975, 53976.
Raphanus sativus, 53971–53973, 53975, 53976.
Raspberry, *Rubus* sp., 53945.
Rheedia edulis, 54052.
Rhopalostylis sapida, 54298.
Ribes punctatum, 53994.
Rice, *Oryza sativa*, 53978, 54282–54296, 54336–54341, 54344, 54346–54349.
Rohdea japonica, 54373.
Rosa spp., 54159–54163, 54250–54265.
abietina, 54104.
acicularis, 54105, 54165.
bourgeauiana, 54166.
engelmannii, 54106, 54167.
gmelini, 54168.
nipponensis, 54169.
alba, 54107, 54170.
alberti, 54108, 54171.
amblyotis, 54109, 54172.
arvensis, 54110, 54173.
baicalensis, 54111.
baltica, 54174.
belgradensis, 54175.
bella, 54176.

Rosa blanda, 54112, 54177, 54178.
borbonica, 54179.
californica, 54113, 54180.
canina, 54114–54117, 54181–54183.
carelica. See *R. acicularis gmelini*.
carolina, 54184, 54185.
caudata, 54118, 54186.
chaberti, 54187.
chinensis manetti, 54119.
chinensis × *noisettiana*, 54188.
cinnamomea [L. 1753], 54120, 54189.
cinnamomea [L. 1759]. See *R. majalis*.
cinnamomea malyi, 54190.
coriifolia, 54121.
cuspidata, 54122, 54191.
damascena, 54123, 54192.
davurica, 54124, 54193.
deseglisei, 54125, 54194.
dumetorum, 54126.
engelmannii. See *R. acicularis engelmannii*.
fedtschenkoana, 54195.
fendleri, 54127, 54196.
ferox, 54128, 54197.
ferruginea, 54198.
foliolosa, 54129.
gallica, 54130, 54199, 54200.
gallica × *canina*, 54201.
gallica officinalis, 54131.
gallica × (?), 54202–54204.
gayiana, 54132.
glauca, 54205–54207.
glutinosa, 54208.
gymnocarpa, 54133.
heliophila, 54209.
alba, 54134.
hibernica, 54210.
involuta, 54211.
jackii, 54135, 54212.
jundzilli, 54136, 54213.
macrantha, 54214.
majalis, 54137, 54215.
malyi. See *R. cinnamomea malyi*.
manca, 54216.
micrantha, 54138, 54217.
montana, 54139, 54218.
moschata nastarana, 54219.
multibracteata, 54220.
multiflora, 54221.
multiflora cathayensis, 54140.
multiflora × *chinensis*, 54222.
nutkana, 54141.
ochroleuca. See *R. spinosissima luteola*.
omissa, 54223.
oxyodon, 54142, 54224, 54225.
palmeri, 54143.
palustris, 54144, 54226.
pendulina. See *R. cinnamomea* [L. 1753].
pisocarpa, 54145, 54227.
pissarti. See *R. moschata nastarana*.
Rosa polyantha. See *R. multiflora* × *chinensis*.
pouzini, 54146.
provincialis. See *R. gallica officinalis*.
rubiginosa, 54147.
rubrifolia, 54228.
rugosa chamissoniana, 54148.
rugosa × *ferruginea*, 54230.
kamchatica, 54149, 54229.
sabini. See *R. involuta*.
saturata, 54231.
sayi. See *R. acicularis bourgeauiana*.
sertata, 54150.
setipoda, 54232.
spinosissima, 54151, 54233–54235.
altaica, 54152, 54236.
hispida, 54153, 54237.
luteola, 54238.
spinosissima × (?), 54239.
stellata, 54154.
sweginzowii, 54240.
turkestanica, 54241.
tuschetica, 54155.
venosa, 54242.
villosa, 54156, 54157, 54243, 54244.
webbiana, 54245.
wichuraiana × (?), 54246.
willmottiae, 54247.
woodsii, 54158, 54248.
xanthina, 54249.
Rose, Apothecary's *Rosa gallica* × (?), 54202.
Beranger, *Rosa gallica* × (?), 54203.
Bourbon, *Rosa borbonica*, 54179.
cinnamon, *Rosa majalis*, 54137, 54215.
Crested Province, *Rosa gallica* × (?), 54204.
damask, *Rosa damascena*, 54123, 54192.
dog, *Rosa canina*, 54114–54117, 54181–54183.
Scotch, *Rosa spinosissima*, 54151, 54233–54235.
Rubus spp., 53945, 54320.
adenotrichos, 53995, 54279, 54280.
Rumex maritimus, 53906.
vesicarius, 53907.

Saccharum officinarum, 53949, 53950, 53997–54016, 54018–54027.
Sage, *Salvia sagittata*, 53992.
Salvia sagittata, 53992.
Sanguisorba minor, 53921.
Sapote, white, *Casimiroa* spp., 54046, 54051.
Setaria italica. See *Chaetochloa italica*.
Soja max, 53930–53939, 53987, 54374–54379.
Solanum sp., 54060.
brevifolium, 53993.
melongena, 53977.
tuberosum, 54059, 54312–54315.

Sorghum, *Holcus sorghum*, 54366, 54425.
vulgare. See *Holcus sorghum*.
Spathodea campanulata, 53983.
Spinach, *Spinacia oleracea*, 54380.
Spinacia oleracea, 54380.
Sterculia nitida. See *Cola nitida*.
Stevia rebaudiana, 53918.
Streptolophus sagittifolius, 54401.
Sugar cane, *Saccharum officinarum*:
Chunnee, 54002.
Kassoer, 54027.
Manjav, 53949.
No. 36 POJ, 54018.
No. 100 POJ, 54019.
No. 139 POJ, 54020.
No. 213 POJ, 54021.
No. 228 POJ, 54022.
No. 862 POJ, 54023.
No. 920 POJ, 54001.
No. 979 POJ, 54024.
No. 1228 POJ, 54025.
No. 1376 POJ, 53997.
No. 1410 POJ, 54000.
No. 1499 POJ, 54010.
No. 1507 POJ, 53998.
No. 1984 POJ, 54011.
No. 2182 POJ, 54007.
No. 2206 POJ, 54008.
No. 2210 POJ, 54009.
No. 2233 POJ, 54016.
No. 2336 POJ, 54012.
No. 2366 POJ, 54013.
No. 2367 POJ, 54015.
No. 2379 POJ, 54026.
No. 2631 POJ, 53999.
No. 2655 POJ, 54005.
No. 2688 POJ, 54014.
No. 2690 POJ, 54004.
Striped Mauritius, 53950.
Yontanzan, 54006.
Zwinga, 54003.
Sunflower, *Helianthus annuus*, 54365.
Sweetbrier, *Rosa rubiginosa*, 54147.
Taro, *Colocasia esculenta*, 53980.
Themeda forskallii. See *T. triandra*.
triandra, 54044.
Timothy, *Phleum pratense*, 53986.
Tomato, *Lycopersicon esculentum*, 53940, 53951–53954, 53984.
Trefoil, yellow, *Medicago lupulina*, 53981.
Trichosanthes anguina, 53908.
Tricuspidaria dependens. See *Crinodendron patagua*.
Trifolium fragiferum, 53913.
glomeratum, 53985.
panormitanum, 54032.
repens, 53912.
subterraneum, 53914.
Triticum aestivum, 53915, 53916, 53979, 54029–54031.
vulgare. See *T. aestivum*.

Urochloa brachyura, 53957.

Vaccinium floribundum, 54281.
Vetch, kidney, *Anthyllis vulneraria*, 53920.
Vetiveria nigritana, 54406.
Vigna sesquipedalis, 54381.
sinensis, 54382.

Warszewiczia coccinea, 54297.
Wheat, *Triticum aestivum*, 53915, 53916, 53979, 54029–54031.

Yam, Chappellier, *Dioscorea batatas*, 54048.
greater, *Dioscorea alata*, 54057.
lesser, *Dioscorea esculenta*, 53924, 54055, 54309.
Yampi, *Dioscorea trifida*, 53996, 54056.
Yang mae, *Myrica rubra*, 53982.
Yellowwood, *Nageia* spp., 54327–54329.

Zea mays, 54317, 54318, 54383, 54384, 54410.
Zinziber sp., 53946.

Issued October, 1923

U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY.

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1921.

(No. 69; Nos. 54426 to 54676.)

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1923.

ADDITIONAL COPIES

OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT

10 CENTS PER COPY

PURCHASER AGREES NOT TO RESELL OR DISTRIBUTE THIS COPY FOR PROFIT.—PUB. RES. 57, APPROVED MAY 11, 1922

CONTENTS.

	Page.
Introductory statement	1
Inventory	7
Index of common and scientific names	39

ILLUSTRATIONS.

	Page.
PLATE I. The mamoncillo, a neglected fruit tree of tropical America. (*Melicocca bijuga* L., S. P. I. No. 54521)	22
II. A relative of the papaya. (*Carica* sp., S. P. I. No. 54529)	22
III. A neglected fruit of tropical America. (*Spondias mombin*, L., S. P. I. No. 54532)	22
IV. The capuchin orange of Chile. (*Citrus sinensis* (L.) Osbeck, S. P. I. No. 54651)	22
V. Fruits of the capuchin orange, natural size. (*Citrus sinensis* (L.) Osbeck, S. P. I. No. 54651)	32
VI. The lucma, a popular fruit in Chile. (*Lucuma obovata* H. B. K., S. P. I. No 54653)	32
FIGURE 1. Map of Central America and South America, showing Wilson Popenoe's exploration routes from 1919 to 1921	2

INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1921 (NO. 69; NOS. 54426 TO 54676).

INTRODUCTORY STATEMENT.

Since these inventories were started, over 23 years ago, there has been such a delay in their appearance in type that the plants chronicled therein were in the hands of the experimenters long before they could read the accounts of the plants which had been sent them.

The last plant which is here recorded reached Washington December 29, 1921, and has still to be propagated before it can be sent out; it is to be hoped that before it goes out next spring a printed description of it will have appeared.

With the exception of a small number of Chilean plants secured by Mr. Popenoe just at the close of his last expedition (fig. 1), all of the plants described in this inventory were sent in by friends of plant introduction scattered over the world.

The success of the Japanese and Indian bamboos in the Southern States makes Mr. Hole's introduction of two forms which have not hitherto been established of interest to a wider public than heretofore; these are *Dendrocalamus brandisii* (No. 54429), which grows to 120 feet and has thick-walled culms, and *Melocanna baccifera* (No. 54430), a low-growing form 30 to 50 feet high, which bears fruits the size of a small pear. It is likely that these will prove of more value in Panama, Porto Rico, and Hawaii than anywhere else.

Mr. Dunbar, who is the first in America to have fruited out the half-evergreen oak, *Quercus serrata*, and who considers this tree one of the most ornamental of the Japanese species, sends us for distribution seeds (No. 54433) from his tree in Rochester, N. Y.

Dr. Gustavus Eisen, well known for his pioneer work in the early days of grape and fig introduction in California, has secured through his friend, Mr. Kouchakji, an interesting peach (No. 54441) from Baalbek and three of the famous Aleppo varieties of apricot (Nos. 54442 to 54444), which can not fail to interest Californians.

It is a long time since we have received anything from Doctor Fenzi, known to Californians as Doctor Franceschi, and it is a pleasure to call attention to a new melon (No. 54445) which he sends in from an oasis 10 miles west of Tripoli and which he remarks has hardly any cavity, but is an exceedingly juicy, delicately perfumed variety with greenish white flesh.

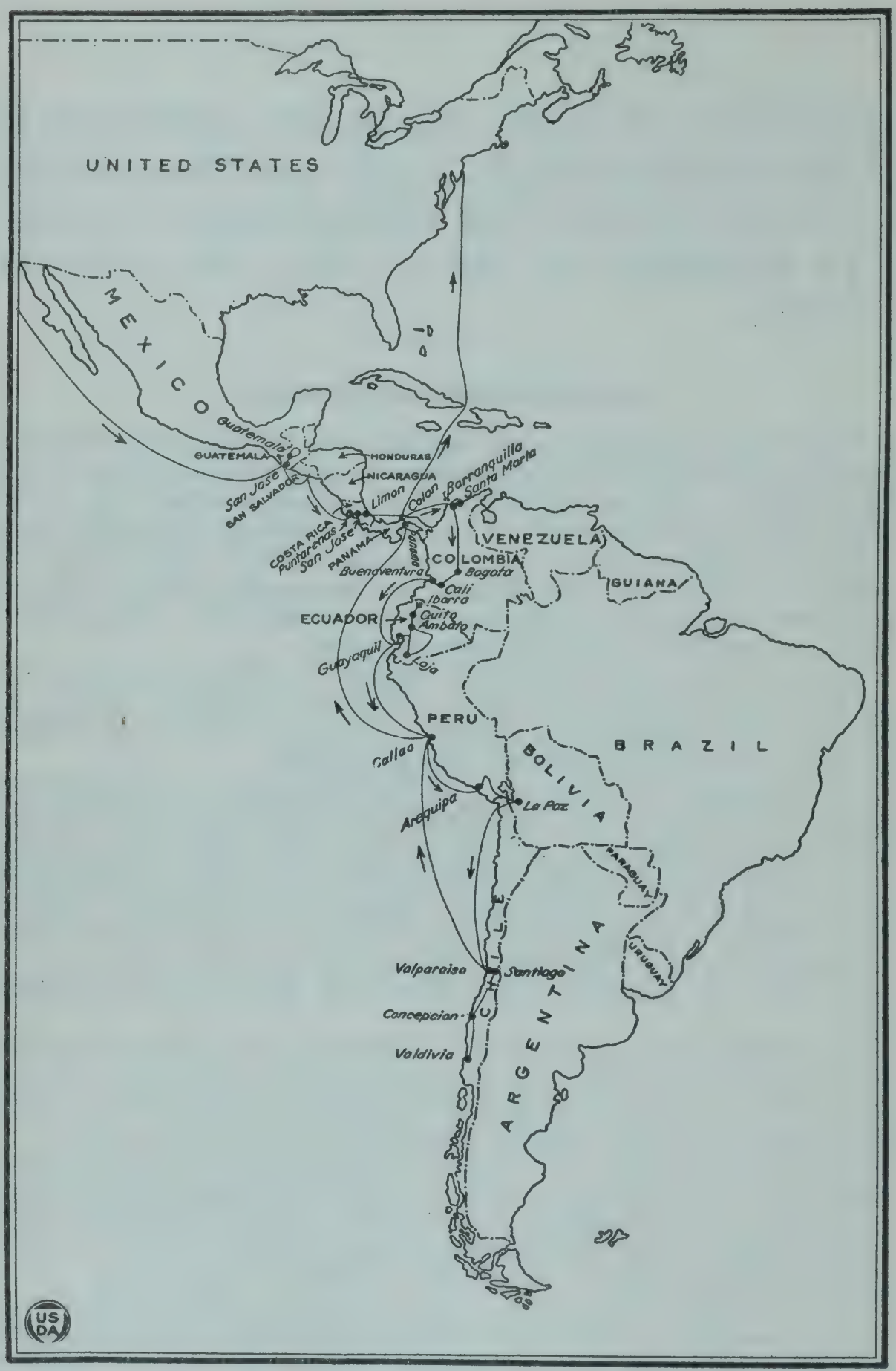


FIG. 1.—Map of Central America and South America, showing Wilson Popenoe's exploration routes from 1919 to 1921. A wealth of new plant material resulted from this trip, including the giant Colombian berry from near Bogota; the Andes berry, many varieties of which are found from Guatemala to Chile; the pejibaye, a staple food of Costa Rica; a number of choice avocados from the Chota Valley, north of Ibarra, Ecuador; several relatives of the papaya; and a host of other plants recorded in this and the four preceding inventories.

Mr. Breakwell, of Sydney, New South Wales, sends two strains of sweet sorghum (Nos. 54435 and 54436), which, when grown under Australian conditions side by side with American varieties of which he imported seeds, were much superior to the latter.

M. Goffart, of Tangier, Morocco, who has made a specialty of acacias for many years, sends us *Acacia pycnantha* (No. 54439), which he finds less intolerant of lime in the soil than any other species, although it is not so hardy. This species ought to do well in Florida, where many species of Acacia fail.

The success which has attended the use of the native species, *Agati* (*Sesbania*) *macrocarpa*, in the Coachella Valley of California has made it seem advisable to try the Indian species *A. grandiflora* (No. 54468), which, although growing into a good-sized tree, has the characteristic of developing its root nodules when quite young and thus suiting itself to use as a green soiling crop. Doctor Lyon, of Hawaii, who sends in the seeds, reports that this species has been so used there by planting thickly and turning under when 4 to 6 feet high.

Most species of Eucalyptus are too tender for cultivation in northern Florida and most parts of California, but *E. gunnii* (No. 54469), the Tasmanian eucalypt, has stood temperatures of 22° F. without the least injury and should be utilized in those localities which are too cool for the other species.

Garcinia spicata (No. 54470) from peninsular India will be a valuable thing if the true mangosteen can be grafted on it and if it will grow better than those other species which we have introduced for stock purposes.

The Ohia tree, *Caryophyllus malaccensis* (Nos. 54489 and 54530), as it grows in Panama is a superb ornamental tree even though one must stand under it to see the superbly beautiful rose-pink flowers which form on the larger branches and are partly hidden by the dark-green foliage. Though perhaps not a really first-rate fruit tree, it deserves to be grown wherever possible for its flowers.

The successful acclimatization of the kafir orange, *Strychnos spinosa*, in southern Florida, where its fruits are beginning to be appreciated, makes the introduction of another species of this genus (*Strychnos* sp., No. 54503) of more than usual interest, for it may be possible now to improve this wild fruit which lacks only quality and a knowledge of how to ripen it to make it a plant well worth cultivating in dooryards.

The demand for a timber which the teredos and white ants will not attack should make of particular interest the cultivating of the stringy bark eucalypt, *Eucalyptus obliqua* (No. 54506).

The unusual behavior of hybrids should entitle the Worcester berry (*Ribes nigrum* × *reclinatum*, No. 54507), which is a cross between the gooseberry and the black currant, to a wide trial, particularly since it is said to be a regular bearer and a very vigorous shrub.

Mr. Harrison, of Burringbar, New South Wales, has sent us again some interesting new plants, among them the Congo grass (*Pennisetum purpureum* (No. 54513), a variety of the elephant grass better than the type; it yields permanent fields of fodder on dry soils. He also sends a selected large-fruited variety of the poha, *Physalis peruviana* (No. 54514).

For some time the desirability of a dwarf mango has been felt by the Florida growers, and the introduction of the Père Louis (No. 54526), a new one from Port of Spain, Trinidad, should be of especial interest to mango growers.

A form of the cereal called Job's-tears, the seeds of which, instead of being so hard that they are useful only as beads, are soft when roasted or boiled like rice or pearl barley, should be called to the attention of tropical agriculturists. We are indebted to Mr. Wester for seeds (Nos. 54454 and 54455).

The improvement of the common papaya through hybridization has not, so far as I am aware, been attempted, although there are several unidentified species of Carica which might contribute to the problem. My son, Graham Fairchild, found on the banks of the Rio Pescado in Panama (No. 54529) what appears to be a species quite similar to one found by Mr. Popenoe in Costa Rica.

The yellow mombin, *Spondias mombin*, seems to be as popular a fruit with the children of the Canal Zone as the Wildgoose plums were with the descendants of the pioneers on the Great Plains; but, notwithstanding the fact that the trees bear fruit varying greatly in quality, nothing seems yet to have been done to improve this fruit tree. Seeds (No. 54532) were imported from Panama to see if the species will grow in Florida.

The Chorisia of Paraguay (*C. speciosa*, No. 54551), which is reported to be a tree that will stand more cold than the kapok tree of Java and yields a silky fiber similar to the best kapok, should be thoroughly tried out in our island possessions and even in southern Florida.

The shisham of British India, *Amerimnon latifolium* (Nos. 54554 and 54555), because of its habit of suckering and its great vigor, enabling it to compete with other forest trees, as well as because it produces timber of excellent quality, deserves to be called to the attention of tropical foresters.

During his brief visit to Chile Mr. Popenoe spent some time with the veteran horticulturist of Chile, Sr. Salvador Izquierdo, of Santa Ines, who has one of the most remarkable collections of plants of horticultural interest in all South America. Thanks to Señor Izquierdo's kindness, we are in possession of some very interesting plants, among them being four varieties of peach of Chilean origin and of excellent quality (Nos. 54622 to 54625); seven interesting native trees, including the Belloto (No. 54627), the Patagua (No. 54628), the Laurel de Chile (No. 54633), the Litre (No. 54634), the Tipu (No. 54643), the Boldo (No. 54639), and the Peumo (No. 54629); a collection of strictly Chilean strawberries (Nos. 54630 and 54631) of the *Fragaria chiloensis* group; also the Huidobro apple (No. 54635), which he has found resistant to the worst insect pest of apples in Chile, the woolly aphis; and the so-called evergreen poplar (No. 54641), which is one of his selections from the common species of poplar of that region.

Mr. Popenoe calls attention to what appears to be a true dwarf orange (No. 54651) found growing in Señor Izquierdo's nursery, which, because of its dwarf habit and the quality of its fruits, he considers promising for dooryard plantings; also to the little-known species of fruit tree, *Lucuma obovata* (No. 54653), which is a popu-

lar fruit in central Chile; it resembles the well-known ti-es already grown in southern Florida, but is much larger.

The collections of F. A. McClure, of the Canton Christian College, are particularly interesting since they were made in Annam, French Indo China, a territory little explored and from which very little material has been received. They include the yan min (*Dracontomelon sinense*, No. 54655), a new fruit tree; two undetermined species of Garcinia (Nos. 54656 and 54657), relatives of the mangosteen, with fruits reminding one of the latter; and the interesting citrus relative, *Severinia buxifolia* (No. 54658), which can stand large amounts of salt in the soil, is suitable for hedges, and appears to be a promising plant for this purpose even if it should not prove of particular value for breeding.

We are again indebted to Doctor Proschowsky, of Nice, France, for a collection of seeds (Nos. 54664 to 54669) from his various Butias, which he calls his fruit palms, and which should certainly be thoroughly tested in those portions of the United States where they are likely to grow. Any fruit-bearing palm adapted to the pinelands of northern Florida would be of considerable value in the years to come.

The botanical determinations of seeds introduced have been made and the nomenclature determined by H. C. Skeels; and the descriptive and botanical notes have been arranged by G. P. Van Eseltine, who has had general supervision of this inventory. Miss Patty T. Newbold has assisted in the compilation of descriptive notes.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., January 4, 1923.

40258—23——2

INVENTORY.[1]

54426 to 54428.

From Canton, China. Seeds presented by F. A. McClure, Canton Christian College, through G. Weidman Groff. Received October 6, 1921.

54426. BENINCASA HISPIDA (Thunb.) Cogn. Cucurbitaceæ. **Wax gourd.** (*B. cerifera* Savi.)

Cheung tsit kwa.

For previous introduction, see S. P. I. No. 48553.

54427. CUCURBITA MOSCHATA Duch. Cucurbitaceæ. **Squash.**

Faan kwa.

54428. BENINCASA HISPIDA (Thunb.) Cogn. Cucurbitaceæ. **Wax gourd.**

Paak pei tung kwa.

54429 and 54430.

From Dehra Dun, India. Seeds presented by R. S. Hole, forest botanist, Forest Research Institute and College. Received October 8, 1921.

54429. DENDROCALAMUS BRANDISII Munro. Poaceæ. **Bamboo.**

A large, evergreen, tufted bamboo with ashy gray to greenish gray stems 60 to 120 feet high, 5 to 8 inches in diameter, slightly branched below, more so above, and having thick walls. This splendid bamboo is often confused with the somewhat similar *Dendrocalamus giganteus*, from which it is easily distinguished by the much smaller spikelets and thicker walled culms. It also closely resembles *D. flagellifer*. The stems are said to be used for building. (Adapted from *Annals of the Royal Botanic Garden, Calcutta, vol. 7, p. 90.*)

54430. MELOCANNA BACCIFERA (Roxb.) Kurz. Poaceæ. **Bamboo.** (*M. bambusoides* Trin.)

Muli or *Moorli*. The Terai bamboo. This is an evergreen arborescent bamboo, unarmed and beautifully erect without any bend or inequality of surface. It grows in its native habitat, the Chittagong Hills, to the height of 30 to 50 feet with a circumference of 12 to 13 inches at the base. Melocanna, though indigenous to Chittagong, is found all over eastern Bengal and Burma; it delights in a sandy soil, and dry spots suit it admirably.

The culms sprout from an underground ramifying rhizome at some distance from each other; and, though thin walled, the bamboo is strong and durable, being largely used for mats and building purposes. It is also observed that white ants and other insects so destructive to the dry bamboo seldom attack Melocanna. This bamboo also yields more or less *tabasheer*, locally called "choona" (lime), but its most remarkable feature is the large fleshy fruit it bears. This berry is in shape like an inverted pear, 3 to 5 inches long, with a long, curved, tapering point. There is a single oval seed inside the pericarp. The fruit is eaten by the natives. (Adapted from *Proceedings and Journal of the Agricultural and Horticultural Society of India, 1913, p. 62.*)

For previous introduction, see S. P. I. No. 21347.

---

[1] It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

54431 and 54432. TRITICUM DURUM Desf. Poaceæ. **Durum wheat.**

From Bengazi, Barca, Libia, Africa. Seeds presented by the director of Economic and Financial Affairs, Servizi Agrari, Governo della Cirenaca. Received October 11, 1921.

54431. *Triminia.* 54432. *Tripshiro.*

54433. QUERCUS SERRATA Thunb. Fagaceæ. **Oak.**

From Rochester, N. Y. Nuts presented by John Dunbar, Assistant Superintendent of Parks. Received October 29, 1921.

"A half-evergreen oak, native to Japan and Chosen. We have grown it here for about twenty years, and it seems to be perfectly hardy. Two trees fruited quite freely this year; Doctor Sargent has no previous record of any trees having produced mature nuts in this country.

"Being of a half-evergreen nature the leaves remain green until very late in the season; sometimes they do assume a dull-yellow color. I think it is one of the most ornamental of the different species of oaks that have been introduced from Japan." (*Dunbar.*)

54434. CANARIUM OVATUM Engl. Balsameaceæ. **Pili nut.**

From Los Banos, Philippine Islands. Seeds presented by Prof. J. E. Higgins, College of Agriculture. Received October 20, 1921.

"Fresh selected *Pili* nuts. You are thoroughly familiar with the excellent quality of the *Pili* nut, and I need not emphasize its value. I believe that the tree ought to grow well in some of the moist places on the northern and eastern sides of Porto Rico and doubtless elsewhere under similar conditions in the West Indies." (*Higgins.*)

For previous introduction, see S. P. I. No. 47901.

54435 and 54436. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Sydney, New South Wales, Australia. Seeds presented by E. Breakwell, agrostologist, Botanic Gardens, through H. N. Vinall, United States Department of Agriculture. Received October 29, 1921.

"Two strains of sweet sorghum. These strains are very superior to those grown in the States, seed of which we obtained and grew side by side last season with those mentioned. The climatic conditions, of course, may be the reason for this, but I hope they will be successful with you." (*Breakwell.*)

54435. *Saccaline.* 54436. *No. 61.*

54437. CANNA FLACCIDA × IRIDIFLORA. Cannaceæ. **Canna.**

From Manila, Philippine Islands. Roots presented by P. J. Wester, agricultural adviser, Bureau of Agriculture. Received November 16, 1921.

"When I was stationed at Malabang, Mindanao, Philippine Islands, a friend gave me a lot of roots of a plant called locally 'Spanish flag.' The growth was jointed, the leaves similar to the Japanese iris, and the blossom, in cross section, approximately a figure 8. The color of the flower was the peculiar rich red of the flag of Spain, broadly bordered in standards and falls by a glorious and broad band of golden yellow, making the handsomest and most brilliant color combination I ever saw in a flower. The plant grows 6 or 7 feet high and blooms almost constantly." (*Col. J. A. Cole, U. S. Army, retired.*)

"The 'Spanish flag' of which Colonel Cole speaks is a variety of the cultivated canna which has naturalized itself and is common everywhere in the Philippines." (*Wester.*)

54438. CHAETOCHLOA ITALICA (L.) Scribn. Poaceæ. **Millet.**
(*Setaria italica* Beauv.)

From Tokyo, Japan. Seeds presented by The Tokyo Plant, Seed, & Implement Co. Received October 15, 1921.

For trial by the Office of Forage-Crop Investigations.

54439. ACACIA PYCNANTHA Benth. Mimosaceæ.

From Tangier, Morocco. Seeds presented by M. Jules Goffart. Received October 27, 1921.

"Concerning this Australian acacia, facts which I have just learned show that in certain regions it has much thicker bark than *Acacia mollissima*, and as for the richness in tannin, one may say it has about the same. Moreover, it has, in my opinion, a great advantage, in that it hybridizes more readily than *A. mollissima* when tried with its relatives *A. dealbata* and *A. normalis*. Furthermore, *A. pycnantha* has the advantage, here at least, over *A. mollissima* of tolerating more or less lime in the soil. On the other hand, at Kenitra, a thing which surprises me, although it is certain, is that it freezes more easily than *A. mollissima*. A few meters away both show the same resistance." (*Goffart.*)

For previous introduction, see S. P. I. No. 49485.

54440. ECHINOCHLOA CRUSGALLI EDULIS Hitchc. Poaceæ.
Barnyard millet.

From Nanking, China. Seeds presented by J. Lossing Buck, College of Agriculture and Forestry, University of Nanking. Received December 13, 1921.

For experimental use by the Office of Forage-Crop Investigations.

For previous introduction, see S. P. I. No. 51341.

54441 to 54444.

From Aleppo, Syria. Seeds presented by Constantine Kouchakji, through Dr. Gustavus Eisen, New York, N. Y. Received November 9, 1921. Quoted notes by Doctor Eisen.

54441. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"*Derrak.* Peach from Baalbek, in Syria. Fruit green and red, 2¾ inches long, 2¼ inches wide. Matures in September."

54442 to 54444. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

54442. "Apricot pits from Aleppo of the variety known as *Ájami* or *Áshami* (Persian). This is the largest apricot in Syria. The small fruit, 1¼ by 2 inches, was grown on poor soil. The largest fruit, 2 by 3¼ inches, was grown on very rich soil. The color is green with red blush. The skin is glossy, tough, and hard, making the fruit suitable for shipping. Flavor sweet like sugar, the sweetest of all apricots. I have never before seen such small pits."

54443. "A variety known in Aleppo as Baladi (from the city). Comes from Damascus. The kernel is sweet like a sweet almond. Color of skin yellow on one side, red on the other. Size 2 inches long by 1½ inches wide. This is the best quality of apricot in all northern Syria; grown in Aleppo, but the trees were imported from Damascus where the variety has been grown for generations. The skin is thick, but not hard. The form of the seed is quite swollen."

54441 to 54444—Continued.

54444. "Apricot pits from Baalbek. This variety is known as *Baalbek*. The fruit is about 2 inches each way, spherical, creased; the color is yellow, without red. The quality is very fine. The kernels are not sweet."

54445. Cucumis melo L. Cucurbitaceæ. **Muskmelon.**

From Tripoli, Libia, Africa. Seeds presented by Dr. E. O. Fenzi, Stabilimento Orticolo Libico. Received October 19, 1921.

"A first-class local variety of melon, known as *Popone di Zanzur* (Zanzur is an oasis on the coast about 10 miles west of Tripoli). The melon is oval-oblong in shape; skin yellowish green, very smooth, and very thin; pulp greenish white, exceedingly juicy, and delicately perfumed, with hardly any cavity, so that there is an unusual proportion of edible fruit. Should be taken up by some specialist, with the view of obtaining a more resistant skin without increasing its thickness." (*Fenzi.*)

54446. Tibouchina sp. Melastomaceæ.

From Rio de Janeiro, Brazil. Seeds presented by Dr. J. Simao da Costa. Received October 14, 1921.

"Seeds of *Tibouchina crenulata* trees which, when in full bloom, are among the most beautiful ornaments of the forests of these latitudes." (*Da Costa.*)

"Trees of the genus Tibouchina are common in the forests of tropical America. They are usually erect, slender, and not over 20 or 25 feet high. The leaves are large and attractive in appearance. The flowers, which are often 4 or 5 inches broad and are produced in clusters at the ends of the branchlets, are usually red-purple to purple in color, often changing from one to the other after opening." (*Wilson Popenoe.*)

Received as *T. crenulata*, for which a place of publication has not yet been found.

54447 and 54448.

From Sao Paulo, Brazil. Seeds purchased from Sr. Eduardo J. Toedtli, through Sr. José Augusto de Loyolla. Received November 12, 1921.

54447. Cymbopogon rufus (Nees) Rendle. Poaceæ. **Jaragua grass.** (*Andropogon rufus* Kunth.)

For previous introduction, see S. P. I. No. 49585.

54448. Melinis minutiflora Beauv. Poaceæ. **Molasses grass.**

"It is known everywhere in this country that the famous *capim gordura*, which is also called *capim gordura roxo Francano*, was native in this district of Franca, in the State of Sao Paulo, and has actually been cultivated by some farmers here in the north of the State, starting from Restinga up to Pedregulhos, along the Mogyana Railroad. This seed comes from a farm called 'Fazenda Santa Alcina,' which lies exactly between Restinga and Mandihu and belongs to Sr. João Alberto de Faria, who gathered the seed this year." (*Toedtli.*)

For previous introduction, see S. P. I. No. 47162.

54449. Bambos tulda Roxb. Poaceæ. **Bamboo.**

From Dehra Dun, India. Seeds presented by R. S. Hole, forest botanist, Forest Research Institute and College. Received October 29, 1921.

The common bamboo of Bengal. The wood is strong and the stems are used for roofing and scaffolding, for mats, etc. Native to Bengal and Burma. (Adapted from *Gamble, A Manual of Indian Timbers, p. 247.*)

For previous introduction, see S. P. I. No. 48229.

54450. Dendrocalamus sikkimensis Gamble. Poaceæ. Bamboo.

From Dehra Dun, India. Seeds presented by R. S. Hole, forest botanist, Forest Research Institute and College. Received October 19, 1921.

A beautiful tufted bamboo with few culms, 60 feet or more high; it grows largest in Sikkim, where it has bigger culms than those of *Dendrocalamus hamiltonii* and is the one preferred for making the "chungas" for carrying water and milk and for churning butter. The dark-green culms are 5 to 7 inches in diameter, naked below, branched above. The oblong-lanceolate leaves, 6 to 10 inches long, are said to be poisonous. The species is readily distinguished by its large, red-brown, globose flower heads, densely velvety felted stem-sheath, and long ciliate auricles of the leaf sheath. Native to the northeast Himalayas in Sikkim and Bhutan at altitudes of 4,000 to 6,000 feet, and at Tura Peak, Garo Hills, at 3,500 feet. (Adapted from *Annals of the Royal Botanic Garden, Calcutta, vol. 7, p. 82.*)

54451 to 54453.

From Syria. Seeds presented by W. R. Meadows, through C. S. Scofield, United States Department of Agriculture. Received October 14, 1921. Quoted notes by Mr. Scofield.

54451. Calotropis procera Ait. Asclepiadaceæ.

"A plant in which Mr. Meadows is particularly interested. It is known, where he collected it, as artificial silk or vegetable silk. He found it growing at Haifa, Syria, on September 7, 1921. Mr. Meadows believes the fiber to have sufficient strength to be used as a filler yarn and hopes that the plant may be produced under observation at some point in the southwestern United States."

For previous introduction, see S. P. I. No. 51429.

54452 and 54453. Ceratonia siliqua L. Cæsalpiniaceæ. **Carob.**

For previous introduction, see S. P. I. No. 45924.

54452. "Honey carob selected at the Carmelite monastery near Haifa, on September 7, 1921. Said to contain a larger percentage of sugar than the ordinary carob."

54453. "Shade-tree carob from the Mount of Olives, just outside of Jerusalem, collected September 4, 1921."

54454 and 54455. Coix lacryma-jobi ma-yuen (Rom.) Stapf. Poaceæ. Ma-yuen.

From Manila, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Bureau of Agriculture, through Dr. C. V. Piper, United States Department of Agriculture. Received October 22, 1921.

Adlay. A form with soft hulls and very distinct from the ordinary *Coix lacryma-jobi* with hard, beadlike, shining grains. The soft-hulled, edible subspecies under discussion here does not appear to have been known to European writers until in the seventeenth century, though in India, its native habitat, this grain was of very ancient cultivation. Certain forms are roasted, then husked and eaten whole, being either parched (like corn) or boiled in the same manner as rice. Other forms are so very different that the grain may be milled and ground to flour and thereafter baked into bread. In China the grain is eaten in soup like pearl barley, which it very much resembles in appearance.

The Bukidnon forms are very vigorous and attain a height of 2 to more than 2.5 meters (8 feet) under favorable conditions. One plant will make from two to four straws, sometimes five. The roots are shallow and rarely extend beyond 35 to 40 centimeters (14 to 16 inches) from the plant. The yield of grain harvested in 1918 from a plat 5 by 6 meters (16 by 20 feet) in Bukidnon was 3,625 kilos to the hectare (3,236 pounds per acre), of which 72 per cent was hulled clean grain.

Analysis of adlay and various other cereals.

Samples.	Moisture.	Protein.	Fat.	Ash.	Crude fiber.	Carbohydrates, starch, etc., by difference.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
Hulled adlay	10.91	11.27	6.65	1.89	0.45	68.83
Wheat	10.62	12.23	1.75	1.81	2.36	71.18
Corn	10.93	9.88	4.17	1.36	1.71	71.95
Rice	11.88	8.02	1.96	1.15	.93	76.0

The tender plants of adlay make a good forage for cattle and horses, and grown for this purpose several cuttings can be obtained from a sowing. (Adapted from *Philippine Agricultural Review, vol. 13, p. 217.*)

54454. "Grown in Laguna Province." (*Wester.*)

54455. "Grown in Jaro, Leyte Province." (*Wester.*)

For previous introduction, see S. P. I No. 49798.

54456. Trifolium pratense L. Fabaceæ. Red clover.

From Valence, France. Seeds purchased from Tezier Frères, through C. Carrigan, American consul, Lyons. Received November 4, 1921.

"Double-cut medium red clover from 2-year-old plants growing on one of the farms of Tezier Frères in the Department of Isere, Dauphine Alps. Harvested in August and September, 1920." (*Carrigan.*)

54457. Dendrocalamus sp. Poaceæ. Bamboo.

From Hankow, China. Seeds presented by Rev. Logan H. Roots, through P. S. Heintzlemann, American consul general. Received November 10, 1921.

"Bamboo seed from the district of Shihnanfu, in the west of Hupeh, where its appearance is connected by the Chinese with the calamities which have recently befallen them. It is said that it comes in hard times to relieve distress, as it acceptably takes the place of rice, and that after it comes the bamboo which produces it dies." (*Roots.*)

54458. Tithonia diversifolia (Hemsl.) A. Gray. Asteraceæ.

From Buitenzorg, Java. Seeds presented by Dr. W. Docters van Leeuwen, director, Botanic Garden. Received November 15, 1921.

"A sunflowerlike plant, 5 to 6 feet high, widespread in Mexico and abundantly introduced into Java and Ceylon; it may be a good plant to use for silage." (*C. V. Piper.*)

54459. Lapageria rosea Ruiz and Pav. Liliaceæ. Chilean bellflower.

From Santiago, Chile. Seeds presented by the Instituto Agricola Bunster, through Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 7, 1921.

"(No. 651a. Criadero 'El Verjel,' Angol, Chile. September 29, 1921.) *Copihue.* This, the national flower of Chile, has been grown occasionally in northern greenhouses, where it creates a genuine sensation when in bloom. It is a climbing plant of slow growth, with slender wiry stems and bright-crimson, tubular flowers about 3 inches in length. In southern Chile huge bunches of these blossoms are brought to the railway stations and sold to passing travelers. The plant requires an acid soil." (*Popenoe.*)

54460. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. **Yang-tao.**

From Indio, Calif. Seeds presented by Bruce Drummond. Received December 2, 1921.

For previous introduction, see S. P. I No. 46864.

54461. TITHONIA DIVERSIFOLIA (Hemsl.) A. Gray. Asteraceæ.

From Peradeniya, Ceylon. Seeds presented by M. Kelway Bamber, secretary, Ceylon Agricultural Society. Received November 3, 1921.

"Seeds of *Tithonia diversifolia* (Singhalese: *Natha-Suriya*, wild sunflower). The plant grows wild." (*Bamber.*)

For previous introduction, see S. P. I. No. 54458.

54462 to 54464.

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, in charge, Department of Botany and Forestry, Experiment Station of the Hawaiian Sugar-Planters' Association. Received November 14, 1921.

54462. BAUHINIA VARIEGATA L. Cæsalpiniaceæ.

"A very handsome tree from India, Siam, Burma, China, and Java, of medium size and well adapted for street and ornamental planting. It has thick, somewhat heart-shaped leaves, and bears, in few-flowered corymbs, purplish red and yellow flowers about 2 inches long and half as broad. It is tropical in its requirements and suitable for cultivation in the United States in the southernmost part of Florida only." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 53568.

54463. CASSIA SIAMEA Lam. Cæsalpiniaceæ.

A medium-sized or sometimes a large tree, with gray, nearly smooth bark, papery, glabrous leaflets, and large, pyramidal, terminal panicles of small yellow flowers. The tree is probably native to Burma and is cultivated throughout India and many tropical countries for its hard heavy wood which is quite durable. The heartwood is dark brown to nearly black in stripes of dark and light; it is used for mallets, walking sticks, for building, and for fuel. (Adapted from *Rock, Leguminous Plants of Hawaii, p. 81.*)

For previous introduction, see S. P. I. No. 51813.

54464. ERYTHRINA VARIEGATA Stickm. Fabaceæ.

"Seeds from the University of Hawaii." (*Lyon.*)

54465 and 54466. GOSSYPIUM spp. Malvaceæ. **Cotton.**

From Ebolowa, Kamerun, Africa. Seeds presented by Fred Hope, superintendent, Frank James Industrial School. Received November 21, 1921.

"I took a trip some time ago and saw a lot of these plants and was surprised to learn that some of them were the size of young orange trees when commencing to bear. I should say the stalk was 4 inches in diameter. The branches in many cases had a spread of 10 feet. One tree was 8 years old, and the owner says he expects many more crops from the tree. Another that I saw, the largest, had a spread of 12 feet." (*Hope.*)

54465. Kidney cotton. **54466.** Wild cotton.

54467. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Salisbury, England. Seeds purchased from the Dunns Farm Seeds, Ltd., through Prof. R. G. Stapledon, Welsh Plant-Breeding Station, Aberystwith. Received December 9, 1921.

"*Dorset Marl-Grass Double-Cut red clover.* This is the most genuine strain and possesses the strongest vitality of any of the red clovers grown in this country." (*Dunns Farm Seeds.*)

54468. AGATI GRANDIFLORA (L.) Desv. Fabaceæ.
(*Sesbania grandiflora* Poir.)

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, in charge Department of Botany and Forestry, Experiment Station of the Hawaiian Sugar-Planters' Association. Received December 10, 1921.

"If given plenty of room, this plant grows into a tree some 30 feet tall, with a trunk diameter of 6 to 8 inches. Seedlings of this tree develop numerous large nodules on their roots at a very early stage in their growth, and we have used the species as a green soiling crop, the seeds being planted thickly and the plants turned under when they were 4 to 6 feet tall." (*Lyon.*)

For previous introduction, see S. P. I. No. 27580.

54469. EUCALYPTUS GUNNII Hook. f. Myrtaceæ.

From Hobart, Tasmania, Australia. Seeds presented by L. A. Evans, Acting Director of Agriculture. Received November 2, 1921.

The cider eucalypt is usually about 50 feet high and grows at altitudes of 4,000 to 5,000 feet in Australia. In the spring the Tasmanians make an excellent cider from the sweetish sap. The tree is also known as sugar gum, because of the sweetness of its leaves, which are browsed by stock. The bark yields tannin, which, in a 12-weeks' process, colors leather light brown and makes it rather flexible. The tree is usually crooked, but is used as a forest cover, and the wood is used for fuel and charcoal. It has stood 22° F. without the least injury. The species is well adapted to dry situations and has grown 7 feet a year on deep, sandy soil in Florida. (Adapted from *Eucalypts in Florida, U. S. Department of Agriculture, Forest Service Bulletin No. 87, pp. 19, 44,* and *Maiden, Useful Native Plants of Australia, pp. 126, 318, 465.*)

For previous introduction, see S. P. I. 36620.

54470. GARCINIA SPICATA (Wight and Arn.) Hook. f. Clusiaceæ.

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received November 10, 1921.

Introduced as a possible stock for the mangosteen.

A medium-sized tree native to the western peninsula of India, with obtuse, shining leaves up to 3 by 8 inches, small flowers in spikes, and smooth, deep-green fruits the size of a walnut. (Adapted from *Hooker, Flora of British India, vol. 1, p. 269.*)

For previous introduction, see S. P. I. No. 16787.

54471. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Poona, Bombay, India. Seeds presented by the director, Department of Agriculture, through Dr. C. R. Ball, United States Department of Agriculture. Received November 21, 1921.

"The heads were about 4 inches long, exceedingly compact and somewhat pyriform, while the seeds were similar in shape to those of *milo* or *feterita*, but smaller and of a yellowish white color." (*Ball.*)

54472. BAUHINIA FLAMMIFERA Ridley. Cæsalpiniaceæ.

From Singapore, Straits Settlements. Seeds collected by I. Henry Burkill, director, Botanic Garden. Received November 26, 1921.

A very lofty climber with scurfy red twigs and ovate-cordate leaves, usually notched at the tip, with red, pubescent petioles and veins. The red-stalked flowers are rich yellow on opening but soon turn to a bright red; they are borne on terminal panicles 8 inches long and nearly as thick. The petals are crisped and hairy outside. This is the common Bauhinia which forms such a conspicuous mass of color in the woods of the low country in Selangor and Perak. (Adapted from *Ridley, New and Rare Species of Malayan Plants, Journal of the Straits Branch, Royal Asiatic Society, No. 82, September, 1920, p. 182.*)

54473. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

From Santiago, Chile. Seeds presented by Sr. Salvador Izquierdo, through Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received November 10, 1921.

"*Escrito* melon. The melons of Chile, which ripen during the months of February, March, and April, are famous for their delicate flavor and remarkable keeping qualities. In 1920 a few of them were shipped from Valparaiso to New York, reaching the latter market in good condition. This seed, which has been obtained at the suggestion of Franklin Adams, of the Pan American Union, is of an unusually good variety, oblong in shape, and of large size. It should be tested in our Southwestern States." (*Popenoe.*)

54474. RIBES VULGARE Lam. Grossulariaceæ. **Garden currant.**

From Faringdon, England. Plants purchased from R. Tucker & Sons. Received December 3, 1921.

Introduced for experimental work by department specialists.

"A midseason variety of upright growth with grayish green foliage and long, medium-sized bunches of dark-red berries. A hardy and prolific variety which has been grown for many years." (*George Bunyard.*)

54475 to 54487. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Khartum, Anglo-Egyptian Sudan, Africa. Seed presented by G. E. Massey, botanist for the Department of Agriculture, Sudan Government, through H. N. Vinall, United States Department of Agriculture. Received December 5, 1921.

"This seed was selected by Mr. Massey as representative of the different varieties of the cultivated sorghums in the provinces or countries adjacent to Khartum." (*Vinall.*)

54475. *Abgara dura.*
54476. *Dura Safra.*
54477. *Faterita* (A).
54478. *Fateria* (B).
54479. *Faterita* (C).
54480. *Faterita* (D).
54481. *Faterita* (E).
54482. *Faterita* (F).
54483. *Faterita* (G).
54484. *Gahan* (?) *dura.*
54485. *Gassabi dura.*
54486. *Hamisi dura.*
54487. *Wad el Fahl.*

54488. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Melbourne, Australia. Seeds purchased from F. H. Brunning. Received December 5, 1921.

To be grown in comparison with American-grown seed; for use of department specialists.

"Locally grown medium red clover." (*Brunning.*)

54489. CARYOPHYLLUS MALACCENSIS (L.) Stokes. Myrtaceæ. **Ohia.**
(*Eugenia malaccensis* L.)

From Ancon, Canal Zone. Seeds presented by James Zetek. Received December 10, 1921.

A beautiful tree up to 60 feet high, native to the Malay Archipelago. The thick, glossy, dark-green leaves, 6 to 7 inches long, form a rich background for the showy clusters of flowers with their long, spreading, bright-red stamens. In early summer the shady interior of the tree seems to be filled with a delicate scarlet haze. The thin-skinned, white to crimson fruits, 2 to 3 inches

long, have crisp, white, juicy flesh. While the fruit is not especially esteemed, the tree is of distinct value as a tropical ornamental. (Adapted from *Popenoe, Manual of Tropical and Subtropical Fruits, p. 308.*)

54490 and 54491.

From Holguin, Cuba. Plants presented by Thomas R. Towns, citrus nurseryman and florist. Received December 30, 1921.

54490. ROSA ODORATA (Andrews) Sweet. Rosaceæ. **Rose.**

Rosa macho. This rose is recommended as a stock by Mr. Towns who states that it is a very strong growing rose which roots very easily. Although it is somewhat thorny he has found that *Paul Neyron*, a thornless variety, after 10 buddings on this stock shows very few thorns. The branches are 4 to 6 feet long and can be budded every 4 inches. In Cuba the plants are ready for budding three months after being set out; they bloom about two months after budding, and two months after this they are considered hardened and ready for sale.

The origin of the *macho* rose is unknown. However, Mr. Goucher, of this office, has also found a previous introduction of this species, S. P. I. No. 44426, to be extremely useful as a stock. The methods used are described under that number.

54491. PSIDIUM GUAJAVA L. Myrtaceæ. **Guava.**

"Seedlings of the everbearing guava." (*Towns.*)

54492. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Milan, Italy. Seeds purchased from Stabilimento Agrario Botanico Fratelli Ingegnoli, through North Winship, American consul. Received December 23, 1921.

For experimental use by the Office of Forage-Crop Investigations.

"This clover is produced in the 'Comune of Cologno Monzese,' in the Province of Milan, Italy, in deep, flinty, clayey soil, slightly chalky." (*Winship.*)

54493. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co., through Hon. A. M. Thackara, American consul general. Received December 29, 1921.

"The type of red clover known as '*Trèfle violet de Bretange*' from the 'Cotes du Nord' is a stronger grower and a better yielder than ordinary red clover." (*Thackara.*)

54494 to 54496. ECHINOCHLOA CRUSGALLI EDULIS Hitchc. Poaceæ. **Barnyard millet.**

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received December 22, 1921.

For the use of specialists of the United States Department of Agriculture.

54494. White.

54495. Brown.

54496. Korean.

54497 and 54498.

From Corfe Mullen, Wimborne, England. Plants purchased from J. J. Kettle. Received December 14, 1921.

54497. RUBUS sp. Rosaceæ. **Raspberry.**

Lloyd George. This variety is said to be perpetual in habit, to keep a supply of fruit from the earliest season until late autumn, and to be immensely vigorous and productive.

54497 and 54498—Continued.

54498. RUBUS sp. Rosaceæ. **Raspberry.**

Perfection (Marlboro). George Bunyard & Co. give a description and the history of this raspberry as follows: "Fruit large, red, of excellent flavor and vigorous growth; canes very stout, bright crimson. Raised by A. J. Caywood of Marlboro, N. Y.; introduced in 1884, and named by him *Marlboro*."

54499. DIOSCOREA JAPONICA Thunb. Dioscoreaceæ. Japanese yam.

From Hereford, England. Bulbils presented by Dr. H. E. Durham, "Dunelm." Received November 22, 1921.

"*Japanese round* yam. This yam seems so far as one can see from a single season's trial, to be the most promising variety I have yet tested. It grows more freely and regularly than the round *Upeh*. The rate of growth, both in a cool house, was about double that of the *Chappellier*." (*Durham.*)

54500. PISONIA ALBA Span. Nyctaginaceæ. Lettuce tree.

From Lamao, Bataan, Philippine Islands. Cuttings presented by P. J. Wester, agricultural adviser, Lamao Horticultural Station. Received November 16, 1921.

"The *lettuce tree* is fairly common in Manila, but I have never seen it flower and do not believe seeds are obtainable in the Philippines. As to the value of the tree for Florida, I am in doubt. The leaves are too thin and therefore likely to be easily injured by frost and would probably also be torn to shreds by the fall and winter winds, in which event the tree would be of little value as an ornamental, at least during the tourist season. The tree may do well in Porto Rico. I have tried the leaves boiled as turnip greens and they are remarkably good as a potherb, so good, in fact, that if on analysis they are found to have a fair amount of nutrients and vitamins the plant is certain to become widely grown in the Tropics. The leaves can not be eaten raw, however. I am using the common name *Maluko* for it. The tree is easily propagated, and once it gets a start can be broadcasted within a very short time," (*Wester.*)

54501. GOSSYPIUM sp. Malvaceæ. Cotton.

From Ceiba, Honduras. Seeds presented by Alexander K. Sloan, American consul. Received December 6, 1921.

Cotton seeds from the Aguan Valley near Trujillo.

"The natives make very little attempt to cultivate cotton, as the only use they put it to is as a binding for cuts in order to check the flow of blood. As a consequence the bush is undisturbed and grows in the course of six or seven years into a tree some 8 or 10 inches in diameter and from 25 to 30 feet in height. As the tree grows larger, the bolls become smaller and the yield in quantity and quality less. In those places where the native wants to obtain a larger crop than usual, the bush is cut to the ground each year and allowed to reseed itself. In that way the bolls are kept at their largest size." (*Sloan.*)

For previous introduction, see S. P. I. No. 28364.

54502. QUERCUS LANUGINOSA Thuill. Fagaceæ. Oak.
(*Q. pubescens* Willd.)

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received December 8, 1921.

A southern European oak which varies in size from a large shrub to a tree 40 feet in height. The grayish green leaves are deciduous and have very wavy margins. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 314.*)

This oak may prove to be a valuable ornamental for regions of mild winters.

54503. Strychnos sp. Loganiaceæ.

From Elizabethville, Katanga, Belgian Congo. Seeds presented by Mrs. Mary Jacobs. Received December 9, 1921.

"From the forest near Elizabethville. This fruit is found in large quantities in this country." (*Mrs. Jacobs.*)

"The fruit is quite similar to that of *S. spinosa* in character, round, about 3 inches in diameter, with a thick, hard shell, inclosing gelatinous aromatic pulp in which numerous flattened seeds are embedded. Although the genus Strychnos is noted for the production of strychnine, a violent poison, the pulp of these fruits is edible. It is not, however, of much economic value." (*Wilson Popenoe.*)

54504. Physalis alkekengi L. Solanaceæ.

From Peking, China. Seeds presented by William Bembower. Received December 10, 1921.

"A red spherical solanaceous fruit I found being sold on the market here. It is said to furnish good medicine for colds." (*Bembower.*)

For previous introduction, see S. P. I. No. 28317.

54505. Lycopersicon esculentum Mill. Solanaceæ. **Tomato.**

From Avondale, Auckland, New Zealand. Seeds presented by H. R. Wright. Received December 12, 1921.

For use of specialists in the department.

"I have seen some splendid crops of this variety." (*Wright.*)

"*Yates Market Favorite.* One of the earliest and hardiest varieties grown. A selection of the old large red, with large, slightly ribbed, solid, juicy fruits which are produced in great profusion and have a good flavor. This variety will thrive and perfect its fruit in dry or wet seasons, when all others are affected with black-spot and rot." (*Yates.*)

54506. Eucalyptus obliqua L'Her. Myrtaceæ.

From Hobart, Tasmania, Australia. Seeds presented by L. A. Evans, acting Director of Agriculture. Received December 13, 1921.

A rapid-growing Tasmanian eucalypt 300 feet high, which grows on poor, stony ranges or on barren sandy soils if not subjected to prolonged drought. The tree is known as *stringy bark* and *Tasmanian oak* and is in much demand for railway sleepers, being nearly everlasting. The wood, being practically non-inflammable, makes a valuable safeguard against conflagrations in tunnels and is especially suitable for underground railways.

Stringy bark is especially suitable for harbor construction, being one of the densest timbers in the world and immune from the attacks of marine insects. It is one of the few kinds which can be obtained in great lengths and contains a resinous substance which resists the Xylophagas. There is an essential oil in the wood which prevents its rotting under exposure to moisture and at the same time acts as a preservative to iron. It stands great exposure to heat and damp, besides possessing the valuable property of repelling the white ant and teredo worm. This timber is of great value in building breakwaters, docks, etc., as its high specific gravity is such that it is unnecessary to weight the piles to get them into position when in deep water. (Adapted from *U. S. Department of Agriculture, Forest Service Bulletin 87, p. 44,* and from *Commerce Reports, 1910, p. 1052.*)

54507. Ribes nigrum × reclinatum. Grossulariaceæ.

From Wisley, Ripley, Surrey, England. Cuttings presented by Fred J. Chittenden, director, Royal Horticultural Society's Gardens. Received December 28, 1921.

The *Worcester berry.* A cross between *Whinham's Industry* gooseberry and *Boskoop Giant* black currant.

A bush 4½ feet high covering 30 to 36 square feet. It is extremely vigorous and makes shoots up to 5 feet long in a year. In general appearance the bush is a gooseberry and a very spiny one. It bears regularly and heavily, producing round fruits the size of a small gooseberry, arranged just as gooseberries are, purple-black in color, with a flavor like that of a sweet gooseberry and without a trace of the black currant. (Adapted from notes by *F. J. Chittenden* and *William Crump* in *The Garden, vol. 84, p. 607.*)

54508. GOSSYPIUM BARBADENSE L. Malvaceæ. **Cotton.**

From Cairo, Egypt. Seed presented by James A. Prescott, Sultanic Agricultural Society, Cairo, Egypt. Received December 27, 1921.

"*Zagora*, if true to type, is the earliest and most productive of the Egyptian types, running from 33 to 35 millimeters. It is very possible that it will succeed in parts of Texas where the longer staples and later Egyptians are not productive." (*George Freeman.*)

54509. LECYTHIS ZABUCAJO Aubl. Lecythidaceæ. **Paradise nut.**

From Port of Spain, Trinidad. Seeds presented by Eugene André. Received December 27, 1921.

"Nuts from 3 or 4 trees that bore fruits for the first time. Several fruited this year and are doing quite well at the Dabadie Nurseries, where few plants thrive in the poor, stiff clay. In all I have 33 trees of different sizes.

"The fruits are large, urn shaped, and vary in size, and they carry a considerable number of nuts." (*André.*)

54510 to 54514.

From Burringbar, New South Wales, Australia. Seeds presented by B. Harrison. Received December 22, 1921. Quoted notes by Mr. Harrison.

54510 and 54511. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

54510. "*Kankri.* An East Indian fruit between the muskmelon and cucumber. The yellow fruit, 2 to 3 feet long, can be eaten with either sugar or salt, according to taste. It should be useful for pies and preserves."

54511. "*Mammoth Yellow.* Grows from 12 to 15 pounds in weight and is very prolific."

54512. PASSIFLORA EDULIS Sims. Passifloraceæ. **Granadilla.**

"*Mammoth passion fruit.* The fruits, of a very delicious flavor and very productive, are twice the size of the ordinary variety."

54513. PENNISETUM PURPUREUM Schumach. Poaceæ. **Elephant grass.**

"*Congo grass.* A variety of elephant grass, 10 to 12 feet high, with thicker stalks, larger leaves, and less fiber than other varieties. Yields 40 to 50 bushels of good fodder per acre and is permanent for some years when established. It grows well in dry soil and is very fattening."

54514. PHYSALIS PERUVIANA L. Solanaceæ. **Poha.**

"*Harrison's Giant.* Evolved by careful selection and cultivation. The very large berries, many 1½ inches in diameter, have a splendid flavor and make delicious pies and preserves. They are as easily grown as tomatoes."

54515. COELOCOCCUS AMICARUM (Wendl.) W. F. Wight. Phœnicaceæ. **Apple-nut palm.**

From Hilo, Hawaii. Seeds presented by Matthias Newell. Received November 10, 1921.

"The *apple-nut* or *ivory-nut* tree is 30 to 50 feet high and is found in the islands of the Pacific. The beautiful brownish scaly fruits are 3 inches in diameter and are used chiefly in the manufacture of the very large buttons used on ladies' coats. Much larger buttons can be made from this nut than from

that of the South American ivory nut, *Phytelephas macrocarpa*, and the buttons are more expensive also because there are fewer trees of *Coelococcus*." (*C. B. Doyle.*)

54516. AGATI TOMENTOSA (Hook. and Arn.) Nutt. Fabaceæ.
(*Sesbania tomentosa* Hook. and Arn.)

From Kaunakakai Molokai, Hawaii. Seed presented by James Munro, manager, Molokai Ranch. Received December 17, 1921.

A woody leguminous plant with pale glabrous compound leaves, silky pubescent beneath, and red or pale salmon-colored flowers an inch long. The plant is prostrate and forms dense mats on the white coral sands of Molokai and on the dunes at Moomomi; on Kauai it is a branching erect shrub several feet in height. (Adapted from *Rock, Leguminous Plants of Hawaii, p. 155.*)

54517 to 54519. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Vera Cruz, Mexico. Seeds presented by Paul H. Foster, American consul. Received October 3, 1921. Quoted notes by L. G. Hoover.

54517. "Fruits white, smooth, spineless, flattened oval to pyriform, about 9 ounces in weight, no corrugations; a desirable type, 4 inches long, 2½ inches wide, and 2 inches thick."

54518. "Fruits light green, smooth spineless surface, with five slight corrugations; shape flattened oval to pyriform; weight about 9 ounces; a desirable type."

54519. "Fruit attenuated pear shaped, color green; 6 inches long by 2 inches in diameter at greatest thickness; spiny; an undesirable type; weight 6 ounces."

54520. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* L. f.)

From Panama. Seeds presented by James Zetek. Received October 1, 1921.

"The lot seemed to be above the average for avocados, both in size and in quality. The fruit varied to some extent in form and substance, apparently including fruit of more than one tree. The seeds were not excessively large and completely filled the seed cavities." (*H. R. Fulton.*)

54521 to 54523.

From Panama. Collected by Dr. David Fairchild, Agricultural Explorer in Charge of the Office of Foreign Seed and Plant Introduction. Received October 4, 1921. Quoted notes by Doctor Fairchild.

54521. MELICOCCA BIJUGA L. Sapindaceæ. **Mamoncillo.**

"No. 3. A single seed collected September 17, 1921. From a tree of *mamoncillo* on the place of Samuel Lewis on the Sabana. Mr. Lewis's son sold this year $55 worth of fruit from this tree. The fruit of this seedling is one of the most delicious I tasted in Panama. There was only one fruit hanging on the tree. Apparently nothing has been done in the way of selecting this excellent fruit, which has an exquisite flavor but has the handicap of very fine silky fibers, which are attached to the seeds themselves and are rather annoying to one not accustomed to them. It is quite possible that this objectionable feature could be eliminated by selection."

For an illustration of this tree, see Plate I.

54522. ROSA sp. Rosaceæ. **Rose.**

"Cuttings of a rose collected in Panama."

54521 to 54523—Continued.

54523. MELICOCCA BIJUGA L. Sapindaceæ. **Mamoncillo.**

"No. 2. Seeds collected September 22, 1921. A tall fruit tree, very popular among the better classes of Panamans. These fruits came from the market of Panama and are not as fine as those from Samuel Lewis's large tree."

For previous introduction, see S. P. I. No. 54521.

54524. AESCULUS TURBINATA Blume. Æsculaceæ.

Japanese horse-chestnut.

From Rochester, N. Y. Seeds presented by John Dunbar, Assistant Superintendent of Parks, Rochester, N. Y. Received October 10, 1921.

"This is a rare tree in this country and in Europe." (*Dunbar.*)

A Japanese horse-chestnut up to 100 feet high with bright deep-green leaves sometimes 27 inches long, which turn clear golden yellow in the autumn. The erect, slender pyramidal panicles, nearly a foot long, are composed of creamy white flowers with petals center blotched with yellow turning pink with age. The tree is distinguished from the familiar European *Aesculus hippocastanum* by the smaller, warty, not spiny capsules 2 inches in length and width and by the finely and more evenly toothed edges of the leaflets. (Adapted from *Curtis's Botanical Magazine, pl. 8713.*)

54525. DATURA LEICHHARDTII F. Muell. Solanaceæ.

From Brisbane, Queensland, Australia. Seeds presented by C. T. White, Government botanist. Received October 7, 1921.

A tall coarse annual, 1 to 3 feet high, with ovate leaves 3 to 4 inches long and pale yellowish white flowers 2 inches long. The reflexed, globular capsule, an inch in diameter, is very prickly. Native to North Australia and Queensland. (Adapted from *Bentham, Flora Australiensis, vol. 4, p. 468.*)

54526. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

From Port of Spain, Trinidad, British West Indies. Plants presented by R. O. Williams, curator, St. Clair Experiment Station. Received October 10, 1921.

"*Père Louis* is a dwarf-growing variety, fruiting early. The plant from which the budwood was taken is a round-headed dwarf tree, furnished with branches to the ground. I remember receiving the *Père Louis* in Demerara, from St. Lucia, and this had much the same habit. I think that the dwarf, early-fruiting habit is inherent. I do not think that the stocks used have anything to do with it, because they are taken indiscriminately and when sufficiently large are grafted upon." (*J. F. Waby, acting curator.*)

"The *Louis* bears very young, has no fiber nor any sourness at the core, and the flavor is nearly as good as that of the *Julie*, which is the best for flavor I have ever eaten. (*O. W. Barrett.*)

54527 and 54528.

From Panama. Seeds collected by Dr. David Fairchild, Agricultural Explorer in Charge of the Office of Foreign Seed and Plant Introduction. Received October 4, 1921. Quoted notes by Doctor Fairchild.

54527. ANNONA MURICATA L. Annonaceæ. **Soursop.**

"Seeds procured September 17, 1921, from an unusually large, presumably fine-flavored fruit of the guanabana, *Annona muricata*. I am not sufficiently familiar with the varieties of this fruit to say whether this was really superior to others which may have been already introduced. The fruit was at least 15 inches long and about 8 inches in diameter, and the flavor could not be very well estimated, because the fruit was picked while green, but Samuel Lewis, who gave me the fruit, assured me it was one of the best varieties he had seen."

54527 and 54528—Continued.

54528. ANNONA PURPUREA Moc. and Sesse. Annonaceæ. **Soncoya.**

"Procured September 18, 1921, from a tree growing beside the path leading to the cove from the Hotel Aspinwall, Taboga.

"The fruit is apparently little appreciated by the people, for it is left to rot on the ground. Some of them were 5 or 6 inches in diameter and very attractive looking, but the flesh was so fibrous and it had so little character that I doubt whether it would be worth growing for its own sake. The gorgeous orange-yellow color of the fruit flesh, however, may make it of value as a species for breeding purposes."

54529. CARICA sp. Papayaceæ.

From Rio Pescado, Panama. Seeds collected by Graham Fairchild. Received October 4, 1921.

"At first glance this fruit resembles the ordinary wild papaya, *Carica papaya*, but on examination it proves to be an entirely different thing. It is rather typically papaya shaped, with more pronounced grooves, not as deep, however, as those of the mountain papaw, *Carica candamarcensis*, of a golden yellow color, very attractive, and has a faint and very pleasant aroma. The fruits are of a peculiarly uniform size and shape. The interior is filled with a white frothy arillus around the seed; this arillus is acidulous in character but without very much flavor. The flesh of the fruit is thin and has little flavor; the fruit as it stands is comparatively worthless. The leaves, instead of being laciniate, are almost entire. The texture of the leaves seems to be harsher than that of the papaya. The tree grows to be about 20 inches high, I should judge. From the low lands near the river." (*David Fairchild.*)

Fruits of this papaya are shown in Plate II.

54530 to 54536.

From Panama. Seeds collected by Dr. David Fairchild, Agricultural Explorer in Charge of the Office of Foreign Seed and Plant Introduction. Received October 4, 1921. Quoted notes by Doctor Fairchild.

54530. CARYOPHYLLUS MALACCENSIS (L.) Stokes. Myrtaceæ. **Ohia.** (*Eugenia malaccensis* L.)

"Seeds from beneath trees cultivated by the late Enrique Lewis at his place on the Sabana, Panama. Gathered September 17, 1921.

"The fruit is much esteemed by members of Mr. Lewis's family and by others, and I had the pleasure of tasting preserves made from it which seem to have a characteristic flavor of some merit. When in flower, the branches of this tree are gorgeous, covered as they are with masses of large flowers an inch or so across, composed of hundreds of beautiful deep rose-pink or crimson stamens. The tree itself is a beautiful ornamental, and it would seem as though more work in the selection of this species should be attempted. The remarkable structure of the seeds suggests a high degree of polyembryony. When the seed germinates (as many of them were doing under the tree) the whole, large, brilliant-green seed seemed to break up into fragments."

For previous introduction, see S. P. I. No. 26412.

54531. CAPSICUM ANNUUM L. Solanaceæ. **Pepper.**

"Seeds of a brilliant-yellow pepper grown in Panama. Collected September 15, 1921. This specimen was collected on the Chillibrillo River at a native Panaman hut. The owner of the plant described it as being 'hot as a candle.' In reality it is a rather mild, almost sweet pepper."

54532. SPONDIAS MOMBIN L. Anacardiaceæ. **Yellow mombin.**

"Seeds of the *jobo* or *yellow mombin*, presented by Mr. Zetek, of Panama, September 19, 1921.

"Few fruit trees which I have ever seen are more heavily laden with fruits than this *jobo*. It is a favorite fruit of the children of Panama, and everywhere at this season of the year you find children throwing sticks at the trees to knock down the *jobos*. The fruits vary tremendously in flavor and amount of fruit flesh, also in the texture of the skin

THE MAMONCILLO, A NEGLECTED FRUIT TREE OF TROPICAL AMERICA.
(MELICOCCA BIJUGA L., S. P. I. No. 54521.)

Not the least important phase of plant introduction is the propagation by vegetative means of superior forms of species such as the mamoncillo, which, as usually seen on tropical American seacoasts, is not a fruit of great value, but which occurs now and then in superior seedling forms. From the tree here shown $55 worth of fruit was sold in one season. Good mamoncillos are the size of plums; they have a thick leathery skin within which is yellowish-white, translucent pulp of aromatic flavor and a single large seed to which the pulp clings tenaciously. (Photographed by David Fairchild, Panama, Canal Zone, September 15, 1921; P27619FS.)

A RELATIVE OF THE PAPAYA. (CARICA SP., S. P. I. NO. 54529.)

Throughout tropical America are found many wild species of Carica, whose edible fruits are usually similar to the cultivated papaya in general character, though oftentimes of very different flavor. The desirability of crossing some of these wild forms with the cultivated sorts has many times been suggested, but so far as known has not yet been seriously attempted. The species here shown, which occurs in the Canal Zone, yields small golden-yellowpleasantly flavored fruits. (Photographed by David Fairchild, Rio Pescado, Canal Zone, September 9, 1921; P27607FS.)

A NEGLECTED FRUIT OF TROPICAL AMERICA. (SPONDIAS MOMBIN L., S. P. I. No. 54532.)

The despised hog plum, or yellow mombin, abundant in many tropical American countries, is sometimes found in superior seedling varieties which merit propagation. Ordinarily it has a strongly terebinthine taste which makes it unattractive to most palates, but occasional forms are sweet, pleasant, and even delicious. Since nearly all species of Spondias are easily propagated in the Tropics by means of large cuttings, it should be a simple matter to improve the yellow mombin by selection and make it a valuable fruit. (Photographed by David Fairchild, Ancon, Canal Zone, September 15, 1921; P27616FS.)

THE CAPUCHIN ORANGE OF CHILE. (CITRUS SINENSIS (L.) OSBECK, S. P. I. No. 54651.)

This orange, presumably a horticultural variety of the common sweet orange, differs from the latter in its dwarf habit of growth and the small size of its fruits, which are rarely over 2 inches in diameter. Since the flavor and quality of the fruit are excellent, the variety suggests itself as of interest for cultivation in California and Florida, where it may prove useful as an attractive dooryard tree. (Photographed by Wilson Popenoe, Santiago de Chile, October 6, 1921; P18856FS.)

54530 to 54536—Continued.

and the size of the seed. Evidently nothing has been done in the way of selection, and yet the tree is perfectly adapted to conditions on the Zone. It seems to me that the best seedlings should be found and preserved by budding. Ice creams and 'chichas' are also made from the fruit flesh."

For previous introduction, see S. P. I. No. 45086.

For an illustration of the fruits of this tree, see Plate III.

54533. SPONDIAS MOMBIN L. Anacardiaceæ. **Yellow mombin.**

"Five fruits of a particularly fine-flavored seedling growing back of the Aspinwall Hotel, at Taboga. Collected September 18, 1921."

For previous introduction, see S. P. I. No. 54532.

54534. SPONDIAS sp. Anacardiaceæ.

"Nine seeds of a variety which I did not see. Collected September 18, 1921. I found the seeds on the path leading along the river from the center of the town over into the center of the island of Taboga. These may represent a better strain of the *jobo* than any of the other seeds.'"

54535. STERCULIA sp. Sterculiaceæ.

"Seeds of a species of Sterculia, sent me by Hugh White, from a handsome shade tree near the corner of his house at Balboa. Collected September 15, 1921. I think this is one of the handsomest shade trees used on the avenues of Balboa, stately and with rather majestic branching habit and, according to Mr. White, bearing good edible seeds of which the children are very fond. The quality of the seeds seems to me rather indifferent. I was unable to find out what species of Sterculia this is, although I suspect it may be *Sterculia foetida*, and if it is, the stench of its flowers should be taken into account seriously by anyone planting it for shade. *S. foetida* has one of the foulest odors known in plants."

54536. ARISTOLOCHIA sp. Aristolochiaceæ.

"Two basketlike fruits of a vine found on the road along the little stream leading from the center of the town back into the island of Taboga. Collected September 18, 1921. The fruits themselves are a distinct curiosity; the vine is not particularly attractive."

54537 to 54539. HOLCUS SORGHUM L. Poaceæ. Sorghum.

(*Sorghum vulgare* Pers.)

From Buitenzorg, Java. Seeds presented by A. A. Crince le Roy, chief, Plant-Breeding Station. Received October 3, 1921. Quoted notes by H. N. Vinall, agronomist, United States Department of Agriculture.

54537. "*Black* sorghum. Seed resembles that of ordinary Black Amber sorgo."

54538. "*Klakah* sorghum. Probably a sweet sorghum, but the seed is unlike that of any of our common varieties."

54539. "*Brown* sorghum. Seed resembles very closely that of Red Amber sorgo."

54540 to 54544.

From Landskrona, Sweden. Seeds presented by W. Weibull. Received October 3, 1921.

Introduced for testing by the Office of Cereal Investigations.

54540 and 54541. AVENA SATIVA L. Poaceæ. **Oats.**

54540. *Echo* oats. **54541.** *Fortune* oats.

54542. SECALE CEREALE L. Poaceæ. **Rye.**

Storm winter rye.

54540 to 54544—Continued.

54543 and 54544. TRITICUM AESTIVUM L. Poaceæ. Common wheat. (*T. vulgare* Vill.)

54543. *Iduna* winter wheat.

54544. *Standard* winter wheat.

54545 and 54546. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Saigon, Cochin China. Cuttings presented by M. E. Carle, director, Laboratoire de Genetique, Institut Scientifique de L'Indochine. Received October 6, 1921. Notes adapted from *Bulletin Agricole de L'Institut Scientifique de Saigon, vol. 2, p. 278.*

54545. *2714 POJ.* A cross between *2364 POJ* (*100 POJ*, very sweet, × *Kassoer*, sereh resistant[2]) and *EK 28.* An early cane similar to *100 POJ*, but thicker, with long, straight internodes, very large, long green leaves at first erect, becoming bent, and a thick inflorescence. This cane suckers freely and has strong, rapid growth. The juice is 15.8 to 20.3 per cent saccharose.

54546. *2725 POJ.* A cross between *2364 POJ* (*100 POJ*, very sweet, × *Kassoer*, sereh resistant[2]) and *EK 28.* An early cane similar to *100 POJ*, but thicker, with very large, bluish green, bent leaves, and thick inflorescence. The cane suckers freely and is of strong, rapid growth. The juice is 19.5 to 21.9 per cent saccharose.

54547 and 54548. OLEA EUROPAEA L. Oleaceæ. Olive.

From Haifa, Syria. Bud sticks presented by Amram Khazanoff, Department of Experimental Agriculture. Received October 8, 1921. Quoted notes by Mr. Khazanoff.

"Material from the oldest and at the same time thriftiest looking olive trees on the Mount of Olives. These happened to be on the premises of the Greek monastery close to the Garden of Get-Shemane (Gethsemane) and appeared to be several centuries old."

54547. "Wild variety on which the cultivated variety was budded."

54548. "Cultivated variety from old trees."

54549. KOPSIA ARBOREA Blume. Apocynaceæ.

From Littleriver, Fla. Seeds presented by Charles T. Simpson. Received October 10, 1921.

"A beautiful, large shrub or small tree native to Japan. It has opposite or whorled, thick, glossy, oblong leaves and corymbs of pretty white flowers which are followed by large, brilliant-crimson, almond-shaped fruits. It is a very fine ornamental, and its only apparent drawback is that it is rather tender. It should be grown in a protected place in lower Florida." (*Simpson.*)

For previous introduction, see S. P. I. No. 39543.

54550. THESPESIA LAMPAS (Cav.) Dalz. and Gibs. Malvaceæ.

From Chota Nagpur Circle, Bengal, India. Seeds presented by A. P. Cliff, Director of Agriculture, through Dr. C. V. Piper. Received October 11, 1921.

"*Ban Kapas* (wild cotton)." (*Cliff.*)

A treelike herbaceous plant with palmately lobed, pilose leaves, 5 inches across and tomentose beneath. The yellow, bell-shaped flowers are 2½ inches wide, with a crimson center. (Adapted from *Kirtikar, Indian Medicinal Plants, vol. 1, p. 188.*)

For previous introduction, see S. P. I. No. 52386.

---

[2] Sereh is a serious disease of sugar cane in Java. Its cause is not yet definitely known.

54551 and 54552.

From Horqueta, Paraguay. Seeds presented by Thomas R. Gwynn, through Harry Campbell, American consul, Asuncion, Paraguay. Received November 14, 1921.

54551. CHORISIA SPECIOSA St. Hil. Bombacaceæ.

"A regular, beautifully formed tree 20 feet high, abundant in Argentina as far north as Formosa and in the river provinces of Paraguay. The boll is 4½ inches in diameter and 6 inches long. The yellow fiber, called Samahu or Samuy, and similar to the best Javan kapok, is used to a limited extent for stuffing pillows and can be used commercially for life preservers, jackets, water wings, mattresses, etc. The tree has resisted 3° C. without injury to its flowers, although the bolls require hot sun. It is one of the most promising plants for cultivation in the warmer parts of the United States and is probably hardier than kapok." (*L. H. Dewey.*)

54552. CYPHOMANDRA sp. Solanaceæ.

"*Aguaraya* (fox fruit). A bush very like the eggplant, except that all the stems and underside of the leaves are covered with short stout thorns. The fruit is the shape and size of a big Stone tomato, light green, thin skinned, and the seed bunched in the center; the meat is abundant, cream colored, and tastes like a Brazilian *mango de oro*. The plant is very sensitive to frost." (*Gwynn.*)

For previous introduction, see S. P. I. No. 39336.

54553. PENNISETUM ORIENTALE TRIFLORUM (Nees) Stapf. Poaceæ. Himalaya grass.

From Kingston, Jamaica. Seeds presented by W. S. Goodman, acting superintendent, Hope Gardens. Received November 10, 1921.

"Called *Himalaya grass* in the West Indies and reputed to be a good forage. Typical *Pennisetum orientale* is regarded as a good fodder grass in Baluchistan." (*C. V. Piper.*)

54554 and 54555. AMERIMNON LATIFOLIUM (Roxb.) Kuntze. (*Dalbergia latifolia* Roxb.) [Fabaceæ. Shisham.

From British India. Seeds presented by C. P. Hartley. Received November 25, 1921. Quoted notes by Mr. Hartley.

"Seeds of a tree that may possibly be of economic value in the southern United States. In Java the tree grows rapidly, outgrowing and suppressing teak on some of the poor soils of eastern Java. The wood is heavier and stronger than teak and is used for furniture, tool handles, and other exacting work, most of the carving in the market here being done on Dalbergia (*sono kling*). The heart is beautiful purple-brown on a fresh cut, changing to nearly black-brown after exposure to the air. The chief limitation on its usefulness is its hardness. From the silvicultural standpoint its remarkable root-sprouting capacity is of interest. In Java it practically never produces seed, reproduction being easily obtained on cut-over areas by wounding the roots of the old trees. I imported this seed from British India in the hope of getting a strain resistant to the local canker disease that affects the quality of the timber here. There is some reason to suspect that, with teak, this tree may have been introduced from British India in the days of the Hindu kingdoms here."

54554. "From Belgaum, Bombay Presidency."

54555. "From Chikalda, Melghat Forest Division, Central Provinces."

54556 to 54560.

From Malanzhe, Angola, Africa. Seeds collected by John Gossweiler and presented by H. A. Longworth, agricultural missionary, Methodist Episcopal Church. Received November 25, 1921.

54556 to 54560—Continued.

54556. CHLORIS MYRIOSTACHYA Hochst. Poaceæ. **Finger grass.**

A perennial grass 1 to 2 feet high ascending from a procumbent base, with flat or convolute leaves. Native to the Dekkan Peninsula. (Adapted from *Hooker, Flora of British India, vol. 7, p. 292.*)

54557. CYMBOPOGON RUFUS (Nees) Rendle. Poaceæ. **Jaragua grass.**
(*Andropogon rufus* Kunth.)

A tufted perennial up to 8 feet high, very generally distributed throughout tropical Africa. It is commonly used for grass fencing in Nigeria and for thatching in Angola. The erect or ascending stems are often stout and bear narrow, rigid, erect leaves and slender, lax panicles 1 to 2 feet long. (Adapted from *Stapf, Flora of Tropical Africa, vol. 9, p. 304,* as *Hyparrhenia rufa.*)

54558. ERAGROSTIS sp. Poaceæ. **Grass.**

"Native forage grass." (*Longworth.*)

54559. TRICHOLAENA sp. Poaceæ. **Grass.**

"Native forage grass." (*Longworth.*)

54560. VETIVERIA NIGRITANA (Benth.) Stapf. Poaceæ. **Grass.**

A coarse smooth perennial with stout rhizomes, stems up to 6 feet high, with oblong panicles up to 1 foot long. The linear, erect, rigid leaves are pale green and 1 to 3 feet long. Native to tropical Africa. (Adapted from *Stapf, Flora of Tropical Africa, vol. 9, p. 157.*)

54561 to 54620. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

From China. Seeds presented by B. W. Skvortzow, Harbin, Manchuria. Received November 16, 1921.

54561. No. 1. Green soy bean for oil, from southern Manchuria.

54562. No. 2. Yellow soy bean from Kaiyuan, Shengking Province.

54563. No. 3. Yellow soy bean from Jungchiangko, Shengking Province.

54564. No. 4. Brown soy bean from Jungchiangko, Shengking Province.

54565. No. 5. Yellow soy bean from Changchun, Kirin Province.

54566. No. 6. Yellow soy bean from Tiehling, Shengking Province.

54567. No. 7. Black soy bean from Tiehling, Shengking Province.

54568. No. 8. Green soy bean from Changchun, Kirin Province.

54569. No. 9. Black soy bean from Kungchuling, Shengking Province.

54570. No. 10. Yellow soy bean from Chutzecheng, southern Manchuria.

54571. No. 11. Yellow soy bean from Shwangchengfu, Kirin Province.

54572. No. 12. Yellow soy bean from Kungchuling, Shengking Province.

54573. No. 13. Black soy bean from Kaiyuan, Shengking Province.

54574. No. 14. Yellow soy bean from Tiehling, Shengking Province.

54575. No. 15. Yellow soy bean from Tungtzedeng, southern Manchuria.

54576. No. 16. Yellow soy bean from Taomen, southern Manchuria.

54577. No. 17. Yellow soy bean from Suntzetai, near Kaiyuan, southern Manchuria.

54578. No. 18. Black soy bean from Changchun, Kirin Province.

54579. No. 19. Yellow soy bean from Changchun, Kirin Province.

54580. No. 20. Green soy bean from Tiehling, Shengking Province.

54561 to 54620—Continued.

54581. No. 21. Green soy bean from Changchun, Kirin Province.
54582. No. 22. Green soy bean from Changchun, Kirin Province.
54583. No. 23. Green soy bean from Kaiyuan, Shengking Province.
54584. No. 24. Yellow soy bean from southern Manchuria.
54585. No. 25. Green soy bean from Liaoyang, Shengking Province.
54586. No. 26. Green soy bean from Liaoyang, Shengking Province.
54587. No. 27. Yellow soy bean from Liaoyang, Shengking Province.
54588. No. 28. Black soy bean from Liaoyang, Shengking Province.
54589. No. 29. Yellow soy bean from Beitzeyangcheng, southern Manchuria.
54590. No. 30. Green soy bean from Yutzecheng, southern Manchuria.
54591. No. 31. Small green soy bean from Yungchiangkou, southern Manchuria.
54592. No. 32. Yellow soy bean from Chonko, southern Manchuria.
54593. No. 33. Green soy bean from Liaoyang, Shengking Province.
54594. No. 34. Black soy bean from Liaoyang, Shengking Province.
54595. No. 35. Yellow soy bean from northern Manchuria.
54596. No. 36. Yellow soy bean from Changchun, Kirin Province.
54597. No. 37. Yellow soy bean from Tungtzedeng, southern Manchuria.
54598. No. 38. Black soy bean from Changchun, Kirin Province.
54599. No. 39. Black soy bean from Liaoyang, Shengking Province.
54600. No. 40. Yellow soy bean from Liaoyang, Shengking Province.
54601. No. 41. Yellow soy bean from northern Manchuria.
54602. No. 42. Black soy bean from Liaoyang, Shengking Province.
54603. No. 43. Yellow soy bean from Tungkalun, Kirin Province.
54604. No. 44. Green soy bean from Shungyanghe, southern Manchuria.
54605. No. 45. Black soy bean from Nungansieng, southern Manchuria.
54606. No. 46. Yellow soy bean from Penhsiku, southern Manchuria.
54607. No. 47. Yellow soy bean from Shengshaton, southern Manchuria.
54608. No. 48. Yellow soy bean from Shachoutai, southern Manchuria.
54609. No. 49. Yellow soy bean from Chanchuen, Kwangtung Province.
54610. No. 50. Brown soy bean from Changchun, Kirin Province.
54611. No. 51. Yellow soy bean from Anda railway station, northern Manchuria.
54612. No. 52. Yellow soy bean from Tiehling, Shengking Province.
54613. No. 53. Yellow soy bean from Tiehling, Shengking Province.
54614. No. 54. Yellow soy bean from Changchun, Kirin Province.
54615. No. 55. Yellow soy bean from Harbin, Kirin Province.
54616. No. 56. Yellow soy bean from Kungchuling, Shengking Province.
54617. No. 57. Yellow bean from Fangtzetung, southern Manchuria.
54618. No. 58. Yellow soy bean from Ssupingkai, southern Manchuria.
54619. No. 59. Yellow soy bean from Kaiyuan, Shengking Province.
54620. No. 60. Yellow soy bean from Changchun, Kirin Province.

54621. LAPAGERIA ROSEA Ruiz and Pav. Liliaceæ. **Chilean bellflower.**

From Santiago, Chile. Plants presented by the Instituto Agricola Bunster, through Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 7, 1921.

"(No. 651. Criadero 'El Verjel,' Angol, Chile. September 29, 1921.)" (*Popenoe.*)

For previous introduction, see S. P. I. No. 54459.

54622 to 54643.

From Santiago, Chile. Plants presented by Sr. Salvador Izquierdo, through Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 7, 1921. Quoted notes by Mr. Popenoe.

54622 to 54625. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.** (*Prunus persica* Stokes.)

54622. "(No. 662. Santa Ines, Chile. October 7, 1921.) *Sport No. 1.* A variety originated at Sr. Izquierdo's nursery, Santa Ines. It is described as a large white cling, round in form, and of very sweet and pleasant flavor. It ripens in February and is considered excellent both for table use and for preserving."

54623. "(No. 663. Santa Ines, Chile. October 7, 1921.) *Sport No. 2.* A variety originated very recently at Sr. Izquierdo's nursery, Santa Ines, and not yet named. It is a cling, of somewhat elliptical form with a sharp point at the apex, white fleshed, and weighing up to 450 grams. It ripens in February and is considered to be a promising new sort."

54624. "(No. 664. Santa Ines, Chile. October 7, 1921.) *Transparente de Conservas* peach. From Sr. Izquierdo's nursery, Santa Ines. This is a standard preserving variety, recommended as one of the very best. It is described as the earliest white peach grown in central Chile; its fruit has much aroma and is of delicate texture and very rich flavor. The tree is said to be more robust and resistant to disease than most other varieties."

54625. "(No. 665. Santa Ines, Chile. October 7, 1921.) *Almendruco* peach. From Sr. Izquierdo's nursery, Santa Ines. This is a remarkable small-fruited peach, believed to have originated in the Elqui Valley of northern Chile, where it is grown commercially. It produces two crops; the fruits of the first one are of medium size and fair quality; those of the second are smaller, very sweet, with almost no seeds in them. These small fruits are used for drying whole and are also preserved in sirup. The variety is a clingstone and is recommended by Prof. John W. Gilmore for trial in California."

54626. AMYGDALUS PERSICA NECTARINA Ait. Amygdalaceæ. **Nectarine.**

"(No. 666. Santa Ines, Chile. October 7, 1921.) *Cardinal Mora.* A nectarine said to have originated as a chance seedling in Sr. Izquierdo's nursery at Santa Ines. It is described as the best nectarine grown in Chile, because of its large size, aromatic flavor, and richly colored juice. It ripens toward the end of January and is recommended for commercial planting."

54627. BELLOTA MIERSII Remy. Lauraceæ. **Belloto.**

"(No. 673. Santa Ines, Chile. October 6, 1921.) Sr. Izquierdo describes this species as follows: 'A large Chilean tree whose wood is highly appreciated for the manufacture of household utensils because of the great diameter which the trunk attains. It has attractive foliage and fruits, the latter when ripe being useful for feeding hogs. A good tree for parks, because of the excellent shade which it gives.' For trial in the Southwestern States and on the Pacific coast."

54622 to 54643—Continued.

54628. CRINODENDRON PATAGUA Molina. Elæocarpaceæ. **Patagua.**
(*Tricuspidaria dependens* Ruiz and Pav.)

"(No. 672. Santa Ines, Chile. October 6, 1921.) *Patagua.* A Chilean tree which grows well in swampy regions. It has small, bell-shaped, white, fragrant flowers, giving it value as an ornamental. The wood is used for cabinetmaking and the bark for tanning. Introduced at the request of Dr. F. V. Coville, of the United States Department of Agriculture."

54629. CRYPTOCARYA RUBRA (Molina) Skeels. Lauraceæ. **Peumo.**
(*C. peumus* Nees.)

"(No. 667. Santa Ines, Chile. October 6, 1921.) One of the handsomest of the native Chilean ornamental trees of rather small size, erect in habit, and in character of foliage somewhat suggests the live oak of southern California. In autumn it bears a profusion of red fruits the size of olives, which greatly add to its decorative value. The fruits have a thin layer of pulp surrounding a large seed and are eaten when cooked. They are not, however, of much value. The species is one which should be tried in our Southwestern States."

54630 and 54631. FRAGARIA CHILOENSIS (L.) Duchesne. Rosaceæ.
Chilean strawberry.

54630. "(No 653. Santa Ines, Chile. October 6, 1921.) *Frutilla roja*, or red-fruited Chilean strawberry. This is a selected strain of the common Chilean strawberry, said to produce fruits of large size and good quality. It will be of interest to strawberry breeders in the United States, and in addition it is worthy of trial in our Southwestern States. While the fruit of *Fragaria chiloensis* is inferior in quality to that of our best cultivated strawberries, it is remarkable for its excellent shipping and keeping qualities; and it seems that varieties might be produced by selection which would merit cultivation on a commercial scale.

"The berry is much used for canning and preserving. It is also eaten fresh. It is a curious circumstance that this species of strawberry, whose fruits are commonly an inch to an inch and a half long, should be called in Chile, Peru, and Ecuador *frutilla* (little fruit), while the much smaller fruit of *Fragaria vesca*, rarely over half an inch long, is termed *fresa* or strawberry. This last-named species is cultivated commercially at Quillota, Chile, whence the fruit, which ripens earlier than that of *F. chiloensis*, is sent to the markets of Santiago.

"As far as I can ascertain by careful examination of the plants and fruits, the *frutillas* of Chile, Peru, and Ecuador are of the same species. Neither in Peru nor in Chile, however, do the plants bear all through the year as they do on the sandy plains near Ambato, Ecuador. I suspect the difference in climatic conditions is the cause of this; on the Equator there are no well-defined seasons and the plants remain active throughout the year; while here in Chile the seasons are fairly well defined and vegetative activity ceases during a part of each year, as with us. The ripening season of *F. chiloensis* in the highlands of southern Peru and central Chile seems to extend, approximately, from the latter part of October to January."

54631. "(No. 654. Santa Ines, Chile. October 6, 1921.) *Frutilla blanca de Chile*, or white Chilean strawberry. This strawberry differs from S. P. I. No. 54630 in the color of its fruits, which are of a much lighter shade of red than those of the latter. It does not seem to be nearly so well known nor so extensively grown in Chile as the common red variety, but it is recommended by Sr. Izquierdo as a large and handsome fruit, highly perfumed. It will be of interest to our strawberry breeders."

54622 to 54643—Continued.

54632. FRAGARIA sp. Rosaceæ. **Strawberry.**

"(No. 655. Cascada del Salto, near Santiago de Chile. October 7, 1921.) This strawberry, of which the varietal name has been lost, is believed by Sr. Izquierdo to have been introduced into Chile from Europe. It may, therefore, be one of the sorts already known in the United States. It succeeds in Chile much better than most other European strawberries, however, and for this reason it seems worthy of introduction into the United States for trial in regions with dry, rather hot climates. The fruits are of good size and excellent quality."

54633. LAURELIA SEMPERVIRENS (Ruiz and Pav.) Tulasne. Monimiaceæ. (*L. aromatica* Juss.) **Chilean laurel.**

"(No. 675. Santa Ines, Chile. October 6, 1921.) *Laurel de Chile.* A handsome tree of southern Chile with dark-green, aromatic foliage. The wood, which is durable and never injured by boring insects, is much used for flooring. For trial on the Pacific coast, where it may be of value as an ornamental plant."

54634. LITHRAEA CAUSTICA (Molina) Hook. and Arn. Anacardiaceæ. (*L. venenosa* Miers.) **Litre.**

"(No. 674. Santa Ines, Chile. October 6, 1921.) A native Chilean tree which resists drought and produces hard wood, employed in the manufacture of carts and wagons. Its leaves are ovate or obovate, thick, and leathery in texture. The flowers, borne in axillary or terminal panicles, are followed by small, white fruits. The sap is caustic and said to be poisonous. For trial in the Southwestern States and on the Pacific coast.

54635 to 54638. MALUS SYLVESTRIS Mill. Malaceæ. (*Pyrus malus* L.) **Apple.**

54635. "(No. 657. Santa Ines, Chile. October 7, 1921.) *Huidobro* apple. Also known as *Araucana* and *Araucana Huidobro.*

"*Huidobro* is said to have originated on the hacienda of Sr. Vicente G. Huidobro in Chile from an Italian seed. The tree is described as very vigorous and productive, the fruit as medium to large, yellow, of firm texture, sweet, aromatic, and juicy. Its ripening season is late autumn (April to May), and the fruits can be kept in good condition, without cold storage, until the following October or sometimes November. Its shipping qualities are excellent.

"*Huidobro* can not be strongly recommended as a dessert apple and, indeed, it is not introduced as such; it has another quality which gives it interest and makes it valuable in Chile and perhaps elsewhere. I refer to its immunity from the attacks of the woolly aphis, perhaps the worst pest of Chilean orchards. Sr. Izquierdo has found that plants of this variety grafted on seedling apple roots will be attacked by the aphis only from the roots upward to the union of stock and scion, not a single insect ever passing on to the scion to carry on his nefarious activities. Because of this characteristic, it is possible that *Huidobro* may have value in the United States as a stock plant on which to graft other and better varieties of the apple.

"The trees of *Huidobro* introduced under the present number are grafted on seedling apple roots."

54636. "(No. 658. Santa Ines, Chile. October 7, 1921.) *Bella Rosa* apple. Described as a medium-sized fruit of firm texture and sweet flavor, recommended for cultivation on a commercial scale. It is immune from the attacks of woolly aphis and is introduced for trial in the United States as a rootstock on which to graft other apples."

54637. "(No. 659. Santa Ines, Chile. October 7, 1921.) *Chestnut* apple. Described as a medium-sized fruit for fall and winter use. Its chief interest lies in its immunity from the attacks of woolly aphis, and it is introduced principally for trial as a rootstock."

54622 to 54643—Continued.

54638. "(No. 660. Santa Ines, Chile. October 7, 1921.) *Reina Cristina* apple. This variety is considered by Sr. Izquierdo the best aphis-resistant apple in Chile. It is said to be a fruit of much better quality than *Huidobro* and worthy of cultivation on a large scale. I doubt if it will prove to be as good as many of our North American apples, but it is worthy of a trial. It should also be tested as a rootstock for other varieties."

54639. PEUMUS BOLDUS Molina. Monimiaceæ. **Boldo.**

"(No. 668. Santa Ines, Chile. October 6, 1921.) A small tree esteemed in Chile for its ornamental and medicinal value. The dried leaves are exported to Europe, where they are employed in diseases of the liver. An infusion of the flowers is also used medicinally. The fruits are eaten, but are not of great value.

"The tree is diœcious and very aromatic in all its parts. It has opposite, rough, short-petioled, ovate leaves; flowers in small axillary racemes; and fruits the size of our northern haws."

54640. POPULUS sp. Salicaceæ. **Poplar.**

"(No. 669. Santa Ines, Chile. October 6, 1921.) Giant poplar of Santa Ines. This tree, more vigorous in growth and ultimately larger than the common poplar of Chile, originated at Santa Ines as a bud sport or mutation. Sr. Izquierdo says of it: 'It grows very rapidly when planted on good soil. Its wood is equal to that of the common poplar, but has few knots because of the rapidity of growth.' Of interest for our Southwestern States."

54641. POPULUS sp. Salicaceæ. **Poplar.**

"(No. 671. Santa Ines, Chile. October 6, 1921.) *Alamo de hoja persistente.* Evergreen poplar. The commonest tree in southern Chile is the *alamo*, or poplar. It is used in place of fences to mark the boundaries of many farms and is planted along numerous roads and avenues. It is commonly a deciduous species, but occasionally trees hold their leaves longer than others and a few are nearly evergreen in character. Sr. Izquierdo has selected one of the latter and has propagated it by cuttings. It seems worthy of trial in our Southwestern States and on the Pacific coast, where it may be of value as a quick-growing ornamental. Its lumber is much used in Chile for rough purposes."

54642. PRUNUS AVIUM L. Amygdalaceæ. **Sweet cherry.**

"(No. 661. Santa Ines, Chile. October 7, 1921.) *Precoz del Salto* cherry (Salto early). This is recommended by Sr. Izquierdo as the best early cherry grown in Chile. It is probably of European origin, but its early history is not known; Sr. Izquierdo found the variety growing at Cascada del Salto when he bought the property a few years ago. Its fruits, which are said to ripen two to three weeks earlier than other cherries cultivated in the same region, are described as medium sized, sweet, and of good quality. The variety is worthy of trial on the Pacific coast."

54643. TIPUANA TIPU (Benth.) Lillo. Fabaceæ. **Tipu.**
(*T. speciosa* Benth.)

"(No. 670. Santa Ines, Chile, October 6, 1921.) *Tipu.* Sr. Izquierdo describes this plant as follows: 'A handsome ornamental tree from the Argentine Republic. It has compact, delicate foliage and is excellent for parks and for planting along streets and avenues. In its native country it is said to grow nearly as rapidly as *Eucalyptus globulus.* In the Botanic Gardens at Buenos Aires it has reached a height of 4½ meters (15 feet) in 31½ months. Plants imported from Argentina have shown much vigor at Santa Ines and have grown even during the winter months. Its wood is useful for furniture and rough purposes. Its horizontal branches make it an excellent shade tree.' For trial on the Pacific coast and in our Southwestern States."

54644 to 54650.

From Santiago, Chile. Plants presented by Instituto Agricola Bunster, Angol, Chile, through Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 4, 1921. Quoted notes by Mr. Popenoe.

54644 to 54646. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"It seemed worth while to obtain for trial in the United States a small collection of Chilean peaches. These should be of especial interest in our Pacific coast and Southwestern States, where the climatic conditions approximate those of Chile. Probably we shall not obtain from the latter country any peaches of better quality than our finest sorts; indeed, this should not be expected, but it seems entirely possible that some of these varieties may prove interesting because of resistance to disease, difference of ripening season, or some other important characteristic. They are, so far as known, varieties which have originated in Chile as seedlings."

54644. "(No. 642. Criadero 'El Verjel,' Angol, Chile. September 29, 1921.) *Maipu* is described as a very productive variety, with large, very sweet fruit having a small stone and ripening in January. The trees which are introduced under this number are budded on stocks of the *Marianna* plum grown from cuttings."

54645. "(No. 643. Criadero 'El Verjel,' Angol, Chile. September 29, 1921.) *Blanquillo de Mayo* peach. This variety is one of the latest which is cultivated in Chile, its ripening season extending into May. It is not a large fruit, but is considered valuable for canning. The tree is said to be very productive. Budded on stocks of the *Marianna* plum."

54646. "(No. 644. Criadero 'El Verjel,' Angol, Chile. September 29, 1921.) *Monstruoso amarillo de Viña del Mar* (large yellow from Vina del Mar) peach. This variety produces fruits of large size, as indicated by the name. The flesh is yellow and of excellent quality. Freestone. The ripening season in Chile is during February. The plants introduced under this number are budded on *Marianna* plum grown from cuttings."

54647 to 54649. MALUS SYLVESTRIS Mill. Malaceæ. **Apple.**
(*Pyrus malus* L.)

54647. "(No. 645. Criadero 'El Verjel,' Angol, Chile. September 29, 1921.) *Huidobro* apple."

For previous introduction, see S. P. I. No. 54635.

54648. "(No. 647. Criadero 'El Verjel,' Angol, Chile. September 29, 1921.) *Verjel* apple. This variety originated at the Criadero 'El Verjel,' of which the Instituto Agricola Bunster is the successor. It is remarkable because of its lateness in flowering, and for this reason is considered valuable. Early-flowering varieties run the risk in southern Chile of having the crop destroyed by late frosts or of being injured by the excessive and cold rains which occur.

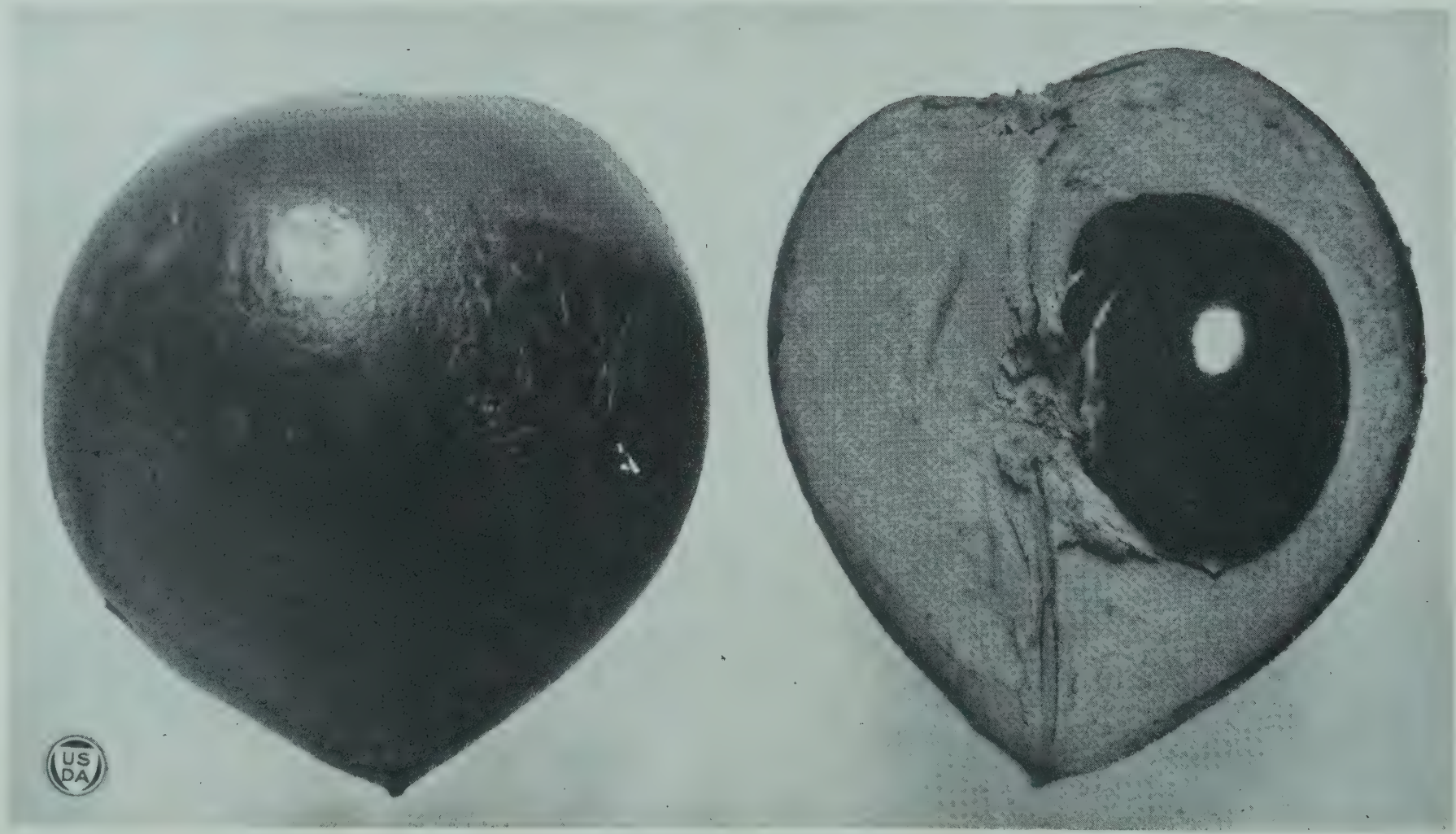
"*Verjel* is described as a medium-sized, sweet apple. Messrs. Crouse and Reed, of the Instituto Agricola Bunster, tell me that it is rather inferior in quality and not likely to meet with favor in the United States. It is introduced mainly for trial as a stock plant; very possibly its tardiness in commencing vegetative activity in the spring might be transmitted, in some measure at least, to other varieties grafted upon it. The tree is said to be notably productive here in southern Chile.

"The plants sent under this number are on seedling apple roots."

54649. "(No. 648. Criadero 'El Verjel,' Angol, Chile. September 29, 1921.) *Puchacay tempranera* (Early Puchacay) apple. Albert Reed, of the Instituto Agricola Bunster, tells me that this apple ripens at the same season as *Duchess of Oldenburg*, and that it is

FRUITS OF THE CAPUCHIN ORANGE, NATURAL SIZE. (CITRUS SINENSIS (L.) OSBECK, S. P. I. No. 54651.)

When grown in the climate of central Chile, this variety strongly resembles in appearance and flavor the Washington navel orange of California. Its fruits are slightly too sour for Chileans, who, in common with other South Americans, prefer sweet fruits to those which are subacid. The Capuchin orange, which is believed to have originated in a monastery at Santiago de Chile, seems worthy of cultivation in other countries for its ornamental value, as well as for the usefulness of its fruit. (Photographed by Wilson Popenoe, Santiago de Chile, October 7, 1921; P18894FS.)



THE LUCMA, A POPULAR FRUIT IN CHILE. (LUCUMA OBOVATA H. B. K., S. P. I. No. 54653.)

This little-known species is cultivated in parts of Ecuador, Peru, and Chile. The dull-green russet-blotched fruit has a thin skin and sweet, mealy, deep-yellow flesh, in flavor resembling somewhat the sapote or Ti-es of southern Florida. (Photographed, natural size, by Wilson Popenoe, Santiago de Chile, October 3 ,1921; P18836FS.)

54644 to 54650—Continued.

for a summer apple, of very fair quality. Salvador Izquierdo considers it to be synonymous with the European variety *Calville Rouge d'Ete*. It is widely and favorably known in Chile and is introduced into the United States with the idea that it may be a variety of Chilean origin, slightly distinct from the last-named sort (with which, I take it, North American pomologists are already familiar).

"*Puchacay tempranera* is described as a large, handsome fruit, with aromatic, sweetly acidulous flesh of excellent quality. It ripens in southern Chile in January and February.

"The plants sent under this number are on seedling apple roots."

54650. PRUNUS AVIUM L. Amygdalaceæ. **Sweet cherry.**

"(No. 646. Criadero 'El Verjel,' Angol, Chile. September 29, 1921.) *Tardia de El Verjel* (Verjel late) cherry. This is a cherry which was first disseminated by the Criadero 'El Verjel,' of which the Instituto Agricola Bunster is the successor. It is either a seedling of one of the European cherries or else a variety brought originally from Europe and given a new name in Chile. It is described as a large, bright rose-colored fruit ripening in January (which is late for cherries in Chile). The tree is recommended as very productive.

"It is not probable that this variety will prove to be valuable in the United States. Because of its lateness in ripening, however, and the likelihood that it is of Chilean origin it is worthy of a trial, especially in those regions of the United States whose climate is similar to that of central and southern Chile.

"Plants grafted on seedling cherry roots."

54651. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Sweet orange.**

From Santiago, Chile. Plants and cuttings presented by Sr. Salvador Izquierdo, through Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 4, 1921.

"(No. 656. Cascada del Salto, near Santiago, Chile. October 7, 1921.) *Capuchin* orange. This appears to me to be a dwarf form of the common sweet orange. Its origin is unknown; Sr. Izquierdo tells me that it was grown formerly in the monastery of the Capuchin monks, which fact accounts for its common name of *Capuchin* orange. In recent years it has been propagated by Sr. Izquierdo and disseminated on a small scale throughout the citrus-growing regions of Chile.

"The tree is much smaller than that of the common sweet orange but is not otherwise distinguishable from the latter so far as I have been able to ascertain. The fruits, which are borne in great profusion, are from 1½ to 2 inches in diameter, round, deep orange, with a rather thin skin and orange-colored flesh containing an abundance of juice. The flavor is much like that of the Washington Navel orange, and the seeds are very few. The ripening season in Chile coincides with that of the Washington Navel. The fruits are somewhat acid for Chileans, who commonly prefer a very sweet orange, but they will, I believe, be found very acceptable to the North American palate. Because of its dwarf character and its decorative value when in fruit, I believe the variety worthy of cultivation in dooryards and perhaps as a house plant." (*Popenoe.*)

For illustrations of the Capuchin orange, see Plates IV and V.

54652. VITIS VINIFERA L. Vitaceæ. **Grape.**

From Chile. Cuttings presented by Prof. John W. Gilmore, through Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 4, 1921.

"(No. 677.) These cuttings were obtained by Professor Gilmore in the Elqui Valley, some distance north of Santiago. This is the grape which furnishes the Huasco raisin, well known throughout Chile. I have examined some of these raisins and find them lighter in color than the muscatel raisins of California,

with very few and small seeds, and with a mild, very pleasant flavor, somewhat less rich than that of the California product. The method of drying which is practiced in the Elqui Valley is a curious one. The grapes are taken from the vine to a small house or shed, in which they are suspended from the rafters; the sun never touches them during the drying process." (*Popenoe.*)

54653. Lucuma obovata H. B. K. Sapotaceæ. Lucma.

From Santiago, Chile. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 7, 1921.

"(No. 652a. Santiago, Chile. October 3, 1921.) Seeds from fruits purchased in the market. This is a little-known fruit cultivated in various parts of Ecuador, Peru, and as far south as Santiago, Chile. It is not highly esteemed in Ecuador, but is popular in central Chile, where the fruits seem to be of better quality than in the former country. The tree reaches 40 feet in height, and when well grown it has a round, dense crown of very attractive appearance. The leaves, which are clustered toward the ends of the branchlets, are obovate, oval or elliptic in outline, subacute at the base, and rounded at the apex, commonly 5 to 10 inches long, deep green, with the margins entire. The small flowers are produced in great abundance along the branches; they are three-fourths of an inch long, the corolla tubular, deeply five toothed, and pale green in color. The fruit is round to elliptic, sometimes with a sharp point at the apex, and commonly 3 to 4 inches long. The surface is deep brownish green, heavily marked or overspread with russet. The skin is very thin and easily broken. The flesh is deep yellow, dry, mealy, and very sweet, resembling in flavor that of the sapote and the *ti-es*, or egg fruit, of southern Florida. The seeds are one or two in number, broadly oval, about 1¾ inches long, dark brown and glossy, especially on the flattened and whitish ventral surface.

"The lucma, as this fruit is called in Chile, is probably too tender for cultivation in California, but will perhaps succeed in southern Florida." (*Popenoe.*)

Fruits of the lucma are shown in Plate VI.

54654 to 54658.

From Tourane, Anam, French Indo China. Seeds presented by F. A. McClure, instructor, Canton Christian College. Received November 10, 1921. Quoted notes by Mr. McClure.

54654. Artocarpus integra (Thunb.) L. Moraceæ. **Jack fruit.** (*A. integrifolia* L.)

"Seeds of the *jack fruit* secured on the market at Hue, Anam, September 30, 1921. Chinese name: *Poh loh mat.*"

For previous introduction, see S. P. I. No. 51012.

54655. Dracontomelon sinense Stapf. Anacardiaceæ.

"Chinese name: *Yan min* or *ngan nim.* The seeds were secured on September 24, 1921, from L. Laforge, who is in charge of the public gardens and trees of Hanoi, Tonkin. The trees from which the fruits were taken are from 8 to 10 meters (26 to 33 feet) in height and are growing along some of the avenues and in the botanic gardens at Hanoi. The soil is fertile delta silt loam, poorly drained. The trees seem to be growing better than ours at the college, which are in tight clay.

"The brownish yellow ovoid fruits are from 3.5 to 5 centimeters (1 to 2 inches) in diameter. The taste is pleasant, but slightly acid."

54656. Garcinia sp. Clusiaceæ.

"Seeds of a fruit secured from a tree growing in a thicket surrounding a Chinese ancestral hall about 4 kilometers (2⅖ miles) southeast of Hue, Anam. The Chinese name is *shaan chuk;* local name, *maang tuk.*

"The tree from which the seeds were taken is about 10 meters (33 feet) in height and 25 centimeters (10 inches) in diameter, breast high. The soil in which it is growing is rich, brown sandy loam, and rather moist.

54654 to 54658—Continued.

"The light-yellow fruit is from 3 to 5 centimeters (1 to 2 inches) in diameter, slightly oval, with a slight prominence at the stem end. It has a pleasant odor and the flavor is delicate, similar to that of the mangosteen which we sometimes get on the Canton market."

54657. GARCINIA sp. Clusiaceæ.

"The tree from which the fruit was secured is about 8 meters (26 feet) in height and 20 centimeters (8 inches) in diameter breast high. It is growing in the edge of a thicket on a mountain side near Hue, about 50 meters (164 feet) above sea level.

"Unfortunately, I could get only a few seeds. The fruit evidently is closely related to S. P. I. No. 54656. It is, however, more plump, and flatter in shape, lighter yellow in color, and distinctly inferior in flavor and quality. The fruit is found commonly for sale in the streets of Hue. Local name: *Tai t'oi.*"

54658. SEVERINIA BUXIFOLIA (Poir.) Ten. Rutaceæ.

"Seeds from sand waste near Tourane, Anam. Secured October 2, 1921. Chinese name: *Tsau peng lak,* known also as *saan kat* and *kau kwat lak.* There was a great deal of variation among the plants observed, some being tall (3 to 4 feet) with long thorns and large leaves and others being short (1 foot), with short, very sharp thorns and small leaves. I collected seeds from the specimens which seemed to be most promising as grafting stock for citrus, being larger and freer from thorns than usual."

A handsome much-branched, spiny shrub which can withstand unusually large amounts of salt in the soil. It may be of use as a stock for citrus fruits in regions having alkali in the soil or having salty irrigation water. The boxlike leaves are shiny above and the small, dark-red, berrylike fruits, half an inch in diameter, become nearly black as they ripen. The plant is readily propagated from cuttings and is suitable for hedges. Native to southern China, Annam, Formosa, and Tonkin. (Adapted from *Journal of the Washington Academy of Sciences, vol. 6, p. 651.*)

For previous introduction, see S. P. I. No. 24433.

54659. QUERCUS ILEX L. Fagaceæ. Oak.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received November 23, 1921.

A large handsome evergreen tree, sometimes reaching a height of 70 to 90 feet, native to the Mediterranean region and cultivated in Europe as an ornamental. The mature leaves are a dark glossy green and usually narrowly oval. The tree prefers a warm light soil and is perfectly hardy in the southern and western parts of England. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 311.*)

54660 to 54662. DIOSCOREA spp. Dioscoreaceæ.

From Orleans, France. Tubers presented by E. Versin, St. Jean le Blanc. Received December 23, 1921. Quoted notes by R. A. Young.

54660. DIOSCOREA BATATAS Decaisne. Chinese yam.

"*Chappellier.* A somewhat short-tubered variety of the Chinese yam which in the unimproved state produces very long, slender tubers. The flesh is very white and of good quality. This species is adapted for growing in temperate regions."

54661. DIOSCOREA JAPONICA Thunb. Japanese yam.

"A white-fleshed, thin-skinned yam of good quality. The tubers are long and slender; a specimen 13 inches long was 1½ inches in greatest diameter and weighed 5 ounces."

54662. DIOSCOREA VILLOSA L. Wild yam-root.

"A slender-tubered yam with moist, white flesh of rather inferior quality. A specimen 16 inches long was 1½ inches in greatest diameter and weighed 9 ounces."

54663. Ananas sativus Schult. f. Bromeliaceæ. Pineapple.

From Limon, Costa Rica. Slips presented by G. P. Chittenden, manager, Costa Rica division, United Fruit Co., through Paul V. Siggers, pathologist for the United Fruit Co., Costa Rica. Received December 20, 1921.

"The *Chocoana* pineapple is commercially cultivated on the island of Taboga, in the Gulf of Panama, whence the fruit is shipped to Panama, Colon, and other cities of the Canal Zone. It is a medium-sized fruit, weighing 2 to 3 pounds, slender and rather tapering in form, externally yellowish green. The white, juicy flesh is sweet and of delicate flavor, making the fruit an excellent one for dessert use, though probably not well adapted for canning." (*Wilson Popenoe.*)

54664 to 54670.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received December 22, 1921.

54664 to 54669. Butia spp. Phœnicaceæ. Palm.

Notes adapted from an article by Dr. Robertson Proschowsky on "The Butias as Fruit Palms for Temperate Climates," Gardeners' Chronicle, 3d ser., vol. 70, p. 260.

54664. Butia capitata deliciosa Proschowsky.

The fruits are almost globular, of a beautiful orange color, and have a rose-colored base. They are the size of large cherries and somewhat smaller than those of *Butia capitata pulposa*. The flesh, though of good thickness, is just a little less abundant than in *B. capitata pulposa*, but by continued selection and hybridization there is every reason to believe that still superior varieties can be raised, of larger size and of different flavors, absolutely fiberless, with abundant flesh and smaller seeds.

54665. Butia capitata lilaceiflora (Chab.) Beccari.
(*Cocos lilaceiflora* Chab.)

Fruits of orange color, about the size of those of *Butia capitata deliciosa*, but usually a little more flattened; base of fruits somewhat rose colored; taste acidulous, agreeable; contains rather many fibers, but these are fine, and many persons eat all the flesh, including the fibers.

54666. Butia capitata odorata (Barb.-Rodr.) Beccari.
(*Cocos odorata* Barb.-Rodr.)

Fruits somewhat variable as to size, ranging from that of small to ordinary cherries, but flattened, of light-orange color, the base very slightly rose colored. Flesh fibrous, taste acidulous, like that of *Butia capitata lilaceiflora*. The agreeable perfume found in all the varieties of *B. capitata* is most pronounced in this variety, hence the varietal name.

For previous introduction, see S. P. I. No. 45073.

54667. Butia capitata pulposa (Barb.-Rodr.) Beccari.
(*Cocos pulposa* Barb.-Rodr.)

Fruits the largest of all, somewhat depressed (flattened), of light-yellow color with rose-colored base. Rather abundant flesh of very good taste, somewhat sweeter than that of *Butia capitata deliciosa*, the taste resembling, perhaps, mostly a mixture of peach and apricot; containing fibers, but not to such an extent as to prevent some persons eating the whole. The seeds are large, about twice the size of those of *B. capitata deliciosa*.

For previous introduction, see S. P. I. No. 51890.

54668. Butia capitata pygmaea Proschowsky.

The flesh is not very abundant; though very fibrous, the acidulous taste is not much inferior to that of *Butia capitata odorata*. This tiny palm has the merit of being especially adapted to pot culture.

54664 to 54670—Continued.

The small seeds, inclosed in the hard endocarp, have kernels of very good taste, like that of the well-known coconut (*Cocos nucifera*). If a way could be found of extracting these seeds without crushing them, there could undoubtedly be found ample use for them.

54669. BUTIA CAPITATA SUBGLOBOSA Beccari.

Fruit the size of ordinary cherries, of very light yellow color, red at the base, almost globose, as the name indicates; flesh nearly fiberless, of acidulous, sweetish flavor, but having a slightly bitter taste.

54670. RAPHIOLEPIS UMBELLATA (Thunb.) C. Schneid. Malaceæ. (*R. japonica* Sieb. and Zucc.)

"Fresh seeds (berries) of a beautiful evergreen, very hardy bush which will, I think, thrive in the southeastern parts of the United States, at least as far as North Carolina." (*Proschowsky.*)

54671 and 54672. ORYZA SATIVA L. Poaceæ. **Rice.**

From Kagoshima, Japan. Seeds presented by K. Tamari, Kagoshima Imperial College of Agriculture and Forestry. Received December 8, 1921.

54671. Scented rice from Hioki County.

54672. Scented rice from Kimotsuki County.

54673 and 54674. MUSA spp. Musaceæ. **Banana.**

From Honolulu, Hawaii. Shoots presented by Willis T. Pope, horticulturist, Agricultural Experiment Station. Received November 28, 1921.

54673. MUSA FEHI Bert.

"*Tahitian*, *Fehi*, or *Barabora*. The shoots of this variety are very long and slim while young. A red, upright-fruiting variety in Hawaii." (*Pope.*)

54674. MUSA PARADISIACA SAPIENTUM (L.) Kuntze.

"*Honduranian Common*, known as the *Brazilian banana* in Honolulu." (*Pope.*)

A large commercial variety of good quality.

For previous introduction, see S. P. I. No. 38923.

54675. DIOSCOREA CAYENENSIS Lam. Dioscoreaceæ. **Yellow Guinea yam.**

From Port Antonio, Jamaica, British West Indies. Tubers presented by E. R. Sasscer, United States Department of Agriculture. Received December 14, 1921.

"Yam taken from the cargo of the American steamship *Bella*, from Port Antonio, Jamaica. The specimen was collected at Baltimore, Md." (*Sasscer.*)

"A yellow-fleshed yam which produces individual tubers up to 2 pounds or more in weight. The flavor of this yam is less delicate than that of some, and the flesh is quite firm, but the texture is good and the color attractive." (*R. A. Young.*)

54676. SOLANUM BULLATUM Vell. Solanaceæ

From Lavras, Minas Geraes, Brazil. Seeds presented by Benjamin H. Hunnicutt, director, Instituto Evangelico, Escola Agricola de Lavras, through C. C. Knight, vice director. Received December 29, 1921.

A South American plant of considerable interest for experimental use as a forage plant because of its large percentage of protein.

For previous introduction, see S. P. I. No. 51802.

INDEX OF COMMON AND SCIENTIFIC NAMES.

Acacia pycnantha, 54439.
Actinidia chinensis, 54460.
Aesculus turbinata, 54524.
Agati grandiflora, 54468.
tomentosa, 54516.
Amerimnon latifolium, 54554, 54555.
Amygdalus persica, 54441, 54622–54625, 54644–54646.
persica nectarina, 54626.
Ananas sativus, 54663.
Andropogon rufus. See *Cymbopogon rufus*.
Annona muricata, 54527.
purpurea, 54528.
Apple, *Malus sylvestris:*
Bella Rosa, 54636.
Chestnut, 54637.
Huidobro, 54635, 54647.
Puchacay tempranera, 54649.
Reina Christina, 54638.
Verjel, 54648.
Apricot, *Prunus armeniaca:*
Ájami, 54442.
Áshami, 54442.
Baalbek, 54444.
Baladi, 54443.
Aristolochia sp., 54536.
Artocarpus integra, 54654.
integrifolia. See *A. integra*.
Avena sativa, 54540, 54541.
Avocado, *Persea americana*, 54520.

Bamboo, *Bambos tulda*, 54449.
Dendrocalamus sp., 54457.
brandisii, 54429.
sikkimensis, 54450.
Melocanna baccifera, 54430.
Bambos tulda, 54449.
Banana. See *Musa* spp.
Bauhinia flammifera, 54472.
variegata, 54462.
Bean, soy, *Soja max*, 54561–54620.
Bellflower, Chilean, *Lapageria rosea*, 54459, 54621.
Bellota miersii, 54627.
Belloto, *Bellota miersii*, 54627.
Benincasa cerifera. See *B. hispida*.
hispida, 54426, 54428.
Boldo, *Peumus boldus*, 54639.
Butia capitata deliciosa, 54664.
capitata lilaceiflora, 54665.
odorata, 54666.
pulposa, 54667.
pygmaea, 54668.
subglobosa, 54669.

Calotropis procera, 54451.
Canarium ovatum, 54434.
Canna flaccida × *iridiflora*, 54437.
Capsicum annuum, 54531.
Carica sp., 54529.
Carob, *Ceratonia siliqua*, 54452, 54453.
Caryophyllus malaccensis, 54489, 54530.
Cassia siamea, 54463.
Ceratonia siliqua, 54452, 54453.
Chaetochloa italica, 54438.
Chayota edulis, 54517–54519.
Chayote, *Chayota edulis*, 54517–54519.
Cherry, sweet, *Prunus avium*, 54642, 54650.
Chloris myriostachya, 54556.
Chorisia speciosa, 54551.
Citrus sinensis, 54651.
Clover, red, *Trifolium pratense*, 54456, 54467, 54488, 54492, 54493.
Cocos lilaceiflora. See *Butia capitata lilaceiflora*.
odorata. See *Butia capitata odorata*.
pulposa. See *Butia capitata pulposa*.
Coelococcus amicarum, 54515.
Coix lacryma-jobi ma-yuen, 54454, 54455.
Cotton. See *Gossypium* spp.
Crinodendron patagua, 54628.
Cryptocarya peumus. See *C. rubra*.
rubra, 54629.
Cucumis melo, 54445, 54473, 54510, 54511.
Cucurbita moschata, 54427.
Currant, garden, *Ribes vulgare*, 54474.
Cymbopogon rufus, 54447, 54557.
Cyphomandra sp., 54552.

Dalbergia latifolia. See *Amerimnon latifolium*.
Datura leichhardtii, 54525.
Dendrocalamus sp., 54457.
brandisii, 54429.
sikkimensis, 54450.
Dioscorea batatas, 54660.
cayenensis, 54675.
japonica, 54499, 54661.
villosa, 54662.
Dracontomelon sinense, 54655.

Echinochloa crusgalli edulis, 54440, 54494–54496.

Eragrostis sp., 54558.
Erythrina variegata, 54464.
Eucalyptus gunnii, 54469.
obliqua, 54506.
Eugenia malaccensis. See *Caryophyllus malaccensis*.

Fragaria sp., 54632.
chiloensis, 54630, 54631.

Garcinia spp., 54656, 54657.
spicata, 54470.
Glycine hispida. See *Soja max*.
Gossypium spp., 54465, 54466, 54501.
barbadense, 54508.
Gourd, wax, *Benincasa hispida*, 54426.
Granadilla, *Passiflora edulis*, 54512.
Grape, *Vitus vinifera*, 54652.
Grass, Congo, *Pennisetum purpureum*, 54513.
elephant, *Pennisetum purpureum*, 54513.
Eragrostis sp., 54558.
finger, *Chloris myriostachya*, 54556.
Himalaya, *Pennisetum orientale triflorum*, 54553.
jaragua, *Cymbopogon rufus*, 54447, 54557.
molasses, *Melinis minutiflora*, 54448.
Tricholaena sp., 54559.
Vetiveria nigritana, 54560.
Guava, *Psidium guajava*, 54491.

Holcus sorghum, 54435, 54436, 54471, 54475–54487, 54537–54539.
Horse-chestnut, Japanese, *Aesculus turbinata*, 54524.

Jack fruit, *Artocarpus integra*, 54654.

Kankri, *Cucumis melo*, 54510.
Kopsia arborea, 54549.

Lapageria rosea, 54459, 54621.
Laurel, Chilean, *Laurelia sempervirens*, 54633.
Laurelia sempervirens, 54633.
aromatica. See *L. sempervirens*.
Lecythis zabucajo, 54509.
Lettuce tree, *Pisonia alba*, 54500.
Lithraea caustica, 54634.
venenosa. See *L. caustica*.
Litre, *Lithraea caustica*, 54634.
Lucma, *Lucuma obovata*. 54653.
Lucuma obovata, 54653.
Lycopersicon esculentum, 54505.

Malus sylvestris, 54635–54638, 54647–54649.
Mamoncillo, *Melicocca bijuga*, 54521, 54523.
Mangifera indica, 54526.
Mango, Père Louis, *Mangifera indica*, 54526.
Ma-yuen, *Coix lacryma-jobi ma-yuen*, 54454, 54455.
Melicocca bijuga, 54521, 54523.
Melinis minutiflora, 54448.
Melocanna baccifera, 54430.
bambusoides. See *M. baccifera*.
Millet, *Chaetochloa italica*, 54438.
barnyard, *Echinochloa crusgalli edulis*, 54440, 54494–54496.
Mombin, yellow, *Spondias mombin*, 54532, 54533.
Musa fehi, 54673.
paradisiaca sapientum, 54674.
Muskmelon, *Cucumis melo*:
Zanzur, 54445.
Kankri, 54510.
Mammoth Yellow, 54511.
Escrito, 54473.

Nectarine, Cardinal Mora, *Amygdalus persica nectarina*, 54626.

Oak. See *Quercus* spp.
Oats, *Avena sativa*:
Echo, 54540.
Fortune, 54541.
Ohia, *Caryophyllus malaccensis*, 54489, 54530.
Olea europaea, 54547, 54548.
Olive, *Olea europaea*, 54547, 54548.
Orange, sweet, *Citrus sinensis*, 54651.
Capuchin, 54651.
Oryza sativa, 54671, 54672.

Palm, apple-nut, *Coelococcus amicarum*, 54515.
Butia spp., 54664–54669.
Paradise nut, *Lecythis zabucajo*, 54509.
Passiflora edulis, 54512.
Patagua, *Crinodendron patagua*, 54628.
Peach, *Amygdalus persica*:
Alemendruco, 54625.
Blanquillo de Mayo, 54645.
Derrak, 54441.
Maipu, 54644.
Monstruoso amarillo de Viña del Mar, 54646.
Transparente de Conservas, 54624.
Unnamed, 54622, 54623.
Penniscetum orientale triflorum, 54553.
purpureum, 54513.
Pepper, *Capsicum annuum*, 54531.
Persea americana, 54520.
gratissima. See *P. americana*.
Peumo, *Cryptocarya rubra*, 54629.
Peumus boldus, 54639.
Physalis alkekengi, 54504.
peruviana, 54514.
Pili nut, *Canarium ovatum*, 54434.
Pineapple, *Ananas sativus*, 54663.
Pisonia alba, 54500.
Poha, *Physalis peruviana*, 54514.
Poplar. See *Populus* spp.
Populus spp., 54640, 54641.
Prunus armeniaca, 54442–54444.
avium, 54642, 54650.
persica. See *Amygdalus persica*.
Psidium guajava, 54491.
Pyrus malus. See *Malus sylvestris*.

Quercus ilex 54659.
lanuginosa, 54502.
pubescens. See *Q. lanuginosa*.
serrata, 54433.

Raspberry, *Rubus* spp.:
Lloyd George, 54497.
Perfection, 54498.
Raphiolepis japonica. See *R. umbellata*.
umbellata, 54670.
Ribes nigrum × *reclinatum*, 54507.
vulgare, 54474.
Rice, *Oryza sativa*, 54671, 54672.
Rosa sp., 54522.
odorata, 54490.
Rose. See *Rosa* spp.
Rubus spp., 54497, 54498.
Rye, Storm, *Secale cereale*, 54542.

Saccharum officinarum, 54545, 54546.
Secale cereale, 54542.
Sechium edule. See *Chayota edulis*.
Sesbania grandiflora. See *Agati grandiflora*.
tomentosa. See *Agati tomentosa*.
Setaria italica. See *Chaetochloa italica*.
Severinia buxifolia, 54658.
Shisham, *Amerimnon latifolium*, 54554, 54555.
Soja max, 54561–54620.
Solanum bullatum, 54676.
Soncoya, *Annona purpurea*, 54528.
Sorghum, *Holcus sorghum*:
Abgara dura, 54475.
Black, 54537.
Brown, 54539.
Dura Safra, 54476.
Faterita, 54477–54483.
Gahan (?) dura, 54484.
Gassabi dura, 54485.
Hamisi dura, 54486.
Klakah, 54538.
No. 61, 54436.
(unnamed) 54471.
Wad el Fahl, 54487.
Saccaline, 54435.
Sorghum vulgare. See *Holcus sorghum*.
Soursop, *Annona muricata*, 54527.
Spondias sp., 54534.
mombin, 54532, 54533.
Squash, *Cucurbita moschata*, 54427.
Sterculia sp., 54535.
Strawberry, *Fragaria* sp., 54632.
Chilean, *Fragaria chiloensis*, 54630, 54631.
Strychnos sp., 54503.
Sugar cane, *Saccharum officinarum*:
2714 POJ, 54545.
2725 POJ, 54546.

Thespesia lampas, 54550.
Tibouchina sp., 54446.
Tipu, *Tipuana tipu*, 54643.
Tipuana speciosa. See *T. tipu*.
tipu, 54643.
Tithonia diversifolia, 54458, 54461.
Tomato, *Lycopersicon esculentum*, 54505.
Tricholaena sp., 54559.
Tricuspidaria dependens. See *Crinodendron patagua*.
Trifolium pratense, 54456, 54467, 54488, 54492, 54493.
Triticum aestivum, 54543, 54544.
durum, 54431, 54432.
vulgare. See *T. aestivum*.

Vetiveria nigritana, 54560.
Vitis vinifera, 54652.

Wheat, *Triticum* spp:
common, Iduna, 54543.
Standard, 54544.
durum, Triminia, 54431.
Tripshiro, 54432.
Worcester berry, *Ribes nigrum* × *reclinatum*, 54507.

Yam, Chinese, *Dioscorea batatas*, 54660.
Guinea, yellow, *D. cayenensis*, 54675.
Japanese, *D. japonica*, 54499, 54661.
Yam-root, *D. villosa*, 54662.
Yang-tao, *Actinidia chinensis*, 54460.

Issued November, 1923.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1922.

(No. 70; Nos. 54677 to 54968.)

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1923.

CONTENTS.

	Page.
Introductory statement	1
Inventory	5
Index of common and scientific names	35

ILLUSTRATIONS.

	Page.
PLATE I. The pejibaye palm, the source of a staple food of Costa Rica. (*Guilielma utilis* Oerst., S. P. I. No. 54776)	20
II. A bunch of seedless pejibayes. (*Guilielma utilis* Oerst., S. P. I. No. 54776)	20
III. Tubers of the Purple Ceylon yam. (*Dioscorea alata* L., S. P. I. No. 54900)	26
IV. Tubers of the Congo yam. (*Dioscorea cayenensis* Lam., S. P. I. No. 54901)	26

INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1922 (NO. 70; NOS. 54677 TO 54968).

INTRODUCTORY STATEMENT.

Although a small inventory, as inventories go, this seventieth one has many new plants which are worthy of mention.

The ka-á he-é (*Stevia rebaudiana*, No. 54677) of Paraguay seems to merit serious consideration as a new source of sweetening, particularly for diabetics, since its glucosid has a sweetening power 150 to 200 times greater than that of sugar. The fact that it has never been cultivated should not deter us from attempting its culture, and since it grows somewhat like our ironweeds it might be harvested by machinery. Glucosids differ from sugars in that they are not foods.

The jaragua grass from Brazil (*Cymbopogon rufus*, No. 54679) is a tall, leafy bunch-grass which can be grazed or cut for hay. It is already being extensively tried in southern Florida.

The molasses grass (*Melinis minutiflora*, No. 54680) of Brazil, one of the best forage grasses of that country, appears to have a great future on the sandy lands of Florida. At first, cattle there refused to eat it, but it has been learned that they were turned out to pasture on it after it had become old and coarse. When this grass is young, cattle are very fond of it.

The chirimoriñon (*Annona* sp., No. 54682) according to H. Pittier, of Caracas, is by far the most delicious of the anonas, and it may become another delicate fruit for southern Florida and our island possessions.

Mesua ferrea (No. 54687), a large, handsome tropical tree with blood-red young foliage, large white scented flowers, and seeds which yield a perfumed oil, may easily add another glory to the tropical vegetation of southern Florida.

Solanum pierreanum (No. 54695), the olombé of French Equatorial Africa, whose fire-red fruits the size of walnuts are eaten by the Pahouins, or natives of Gabon colony, might possibly be crossed with the tomato.

The chilacayote (*Cucurbita ficifolia*, No. 54700), a member of the cucumber family from Mexico, the fruits of which resemble small watermelons and are used for pie and for making conserves, may be well worth growing in the vegetable gardens of the South.

Eugenia klotzschiana (No. 54702), the pera do campo, is a pear-shaped fruit which was first featured by Dorsett and Popenoe in their introductions from Brazil because of its most unusual fragrance,

which attracted their attention hundreds of yards away when found on the prairies of Brazil. It should be brought into cultivation because of its fragrant edible fruits.

Aleurites montana (No. 54703), the mu-oil tree of southern China, from which a part of the wood oil of commerce is derived, is a more tropical tree than the tung-oil tree (*A. fordii*) and may prove more productive in parts of Florida than the latter, which is being exploited there.

The Sumatra Casuarina (No. 54705) is a more attractive-looking tree than the ordinary Australian one, and if it proves as hardy and as rapid a grower it may take the place of this so-called Australian pine in southern Florida as a street tree.

The pink shower (*Cassia grandis*, No. 54706), although an exceedingly handsome tree 50 feet or more in height, with abundant clusters of deep-pink flowers which open in early spring, seems curiously enough never to have been naturalized in southern Florida. Its advent there may cause a sensation among amateur horticulturists.

A superb collection of 17 varieties of *Prunus mume* (Nos. 54709 to 54725) has been sent us by Prof. T. Onda for propagation and trial. It seems strange that so little has been done in America with these remarkable Japanese dooryard trees, especially when one considers their fragrance, their picturesque habit, and the exquisite varieties still in existence which were produced by the gardeners of the feudal days of Japan.

From Chiengmai, Siam, J. F. Rock, our agricultural explorer, sends in a quantity of seeds of another source of chaulmoogric acid, *Hydnocarpus anthelminthica* (No. 54726), which may prove more adaptable for cultivation than the true chaulmoogra tree, *Taraktogenos kurzii*.

Rosa gentiliana (No. 54735) was first introduced by us several years ago for the use of the late Dr. Walter Van Fleet, and it has done remarkably well on his place at Bell, Md. When Doctor Van Fleet started for Florida last winter, he took with him a cutting from his bush, thinking that it would be particularly adapted to the South. After the doctor's death, Mrs. Van Fleet gave the slip to Mr. Simmonds, who reports that it is growing well at the Miami Garden.

Danthonia setacea (No. 54736) is one of the pasture grasses of Tasmania and New South Wales. The established value of these danthonias as pasture grasses in Australia makes them worthy of special trial in our own Southwest where, like so many of the introduced grasses, they may prove superior to our native species because of their resistance to drought.

The kangaroo grass of Australia (*Themeda australis*, No. 54737), though coarse, is liked by cattle and sheep. It may seed better in this country than in its native land and prove a valuable addition to southern pastures.

Mr. Popenoe's description of the pejibaye (*Guilielma utilis*, No. 54776) should appeal to horticulturists throughout the Tropics, for it describes a valuable food plant which appears to have been strangely overlooked by the inhabitants of the Tropics of South

America, Africa, and the Orient. It deserves, in Mr. Popenoe's opinion, to rank with the date as a food-producing palm.

A single bush of the grumichama of Brazil has proved hardy in southern Florida, withstanding the freeze of 1917, and it has bloomed profusely there. Its excellent cherrylike fruits and its dark-green foliage and white flowers will probably make it very popular wherever it can be grown. It is interesting to get seeds of it (*Eugenia dombeyi*, No. 54777) and a favorable opinion regarding it from Mr. Regnard, of Mauritius.

Davidsonia pruriens (No. 54785), from Queensland, with acid, plumlike purple fruits the size of a goose egg, used by the settlers for jams and jellies, may prove to be a useful fruit tree in southern Florida and California.

The walnuts (*Juglans regia*, Nos. 54788 to 54790) from the lower Himalayas in the Northwest Provinces of India, according to Howard Spence who sends them, have special vigor and hardiness and on account of the ease with which they can be transplanted are believed valuable as a stock.

Through Henry S. Wellcome we received from Kordofan seeds of the hashab (*Acacia verek*, No. 54799), the acacia which furnishes the finest quality of gum arabic.

A variety of sugar cane (*Saccharum officinarum*, No. 54902) which originated in the Shahjahanpur Sugar-Experiment Station of British India and has shown a remarkable resistance to frost in Queensland may prove of unusual value to sugar-cane growers in Florida and Louisiana.

A wild apple (*Malus doumeri*, No. 54903), sent by Mr. Miéville from the mountains of French Indo China, which, according to Chevalier, was probably cultivated there in ancient times and is now preserved as one of the sacred trees around Laos pagodas, can hardly fail to attract the attention of apple breeders and those who are hunting for the best stock on which to grow our cultivated varieties.

Three strains of the ma-yuen, or adlay (*Coix lacryma-jobi mayuen*, Nos. 54906 to 54908), a soft-shelled variety of Job's tears, which, according to Wester, has decided advantage over upland rice for tropical agriculture, being more drought resistant, a much heavier yielder, and requiring not over half the cost of cultivation, deserve an extensive trial throughout the Tropics. Demonstrations have shown that the adlay can be used in most of the ways in which we use corn.

E. W. Davy sends us from the dense humid forests of tropical Africa *Myrianthus arboreus* (No. 54910), which bears edible fruits 4 inches in diameter that are much appreciated by the natives. It should be tried in those regions in the Tropics inhabited by people with discriminating palates and might prove to be a valuable fruit.

A collection of early-ripening, stiff-stemmed varieties of oats and barley (Nos. 54911 to 54917), sent by Haakon Foss, should prove useful in the regions of the United States having high altitudes.

Dr. E. O. Fenzi has sent from the northern slope of the Cyrenaican plateau of Tripoli seeds of the wild forms of *Cupressus sempervirens* and *Juniperus phoenicea* (Nos. 54918 and 54919) which

may, he thinks, differ from the varieties of these species that have been so long in cultivation.

A collection by Miss Ola Powell of the remarkable pimientos (*Capsicum annuum*) of southeastern Spain, which are so mild that they can be eaten like apples, is represented by Nos. 54959 to 54962. They are grown, dried, ground, and used for their characteristic pimiento flavor and not for their peppery character.

Mr. Rock has suggested *Barringtonia asiatica*, which forms extensive beach forests on the Pacific islands, for use as a beach tree for the sandy keys of Florida; and Doctor Lyon, of Honolulu, has sent in a quantity of the large pyramid-shaped seeds for trial (No. 54963).

The interest in carob culture in southern California makes the introduction by Sr. Liro Oritz of three varieties (*Ceratonia siliqua*, Nos. 54964 to 54966) from Malaga of importance, as we do not yet know which of the superior varieties from the Mediterranean region is going to prove most productive in America.

The botanical determinations of seeds introduced have been made and the botanical nomenclature revised by H. C. Skeels, and the descriptive and botanical notes arranged by G. P. Van Eseltine, who has had general supervision of the work.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., January 18, 1923.

INVENTORY.[1]

54677. Stevia rebaudiana Bertoni. Asteraceæ.

From Buenos Aires, Argentina. Seeds presented by D. S. Bullock, Agricultural Commissioner, Bureau of Agricultural Economics. Received January 12, 1922.

"*Ka-á he-é* (sweet herb) is native to Paraguay, growing on the high ground where the yerba maté flourishes. The plant is ordinarily about 20 inches in height with leaves about an inch long. In its wild state the plant is very rare, and no planting of the seeds has ever produced results. It is now believed that the seed is fertile but takes several years to germinate. Propagation is by cuttings. Analyses of the leaves made in Germany show the 'sugar' to be a glucosid in combination with soda and an aromatic resin. It has a sweetening power from 150 to 200 times greater than cane sugar and is soluble in water. It does not ferment and is nontoxic. It is claimed that there is nothing injurious in the leaves and that they can be used for sweetening directly in the natural state, drying and grinding only being required. The aromatic resin gives an additional slight pleasant taste. Since the 'sugar' is soluble, it can be extracted, and it can be used in the liquid form for preserves. It is also claimed that *ka-á he-é* is an ideal and safe sugar for diabetics.

"A German scientist now in Paraguay claims that the plant can be cultivated in fields in a manner similar to alfalfa and cuttings made each year. If the truth of this is demonstrated the plant *ka-á he-é* should be a profitable commercial sugar producer." (*George S. Brady.*)

"George S. Brady, American trade commissioner here, tells me that after being started, the plants can possibly be cut with machinery, as peppermint is cut in Michigan.

"The seeds, I understand, are very small and difficult to grow. It is possible, however, that by treating them as the natives in Paraguay do the maté seed, allowing it to soak in water and wood ashes for 36 or 48 hours, they might germinate." (*Bullock.*)

54678. Echinochloa colonum (L.) Link. Poaceæ. Grass.

From Khartum. Anglo-Egyptian Sudan. Seeds presented by R. E. Massey, Government botanist, Department of Agriculture. Received December 27, 1921. Numbered January, 1922.

Received as *Brachiaria isachne* and sent in response to a request for *Difra* (*Panicum breviradiatum* Hochst.).

54679 and 54680.

From Lavras, Minas Geraes, Brazil. Seeds presented by B. H. Hunnicutt. Received January 14, 1922.

54679. Cymbopogon rufus (Nees) Rendle. Poaceæ. Jaragua grass. (*Andropogon rufus* Kunth.)

A perennial grass native to Brazil and cultivated there and at various other places in the American Tropics. This leafy bunch-grass, the tussocks of which become a foot or so in diameter and the numerous leafy culms 6 to 10 feet high, is primarily a hay grass and yields the best

[1] It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

54679 and 54680—Continued.

quality if cut when 3 feet high, so that from two to six cuttings may be made in a year. The hay is considered excellent for fattening and particularly desirable as horse feed. Previous introductions have been tested in the South and in California with promising results, though the grass is killed at temperatures of about 25° F. In Brazil the grass is also grazed, but it must not be overgrazed, as under such treatment it is killed. At the present time it is being extensively tested in Florida and Texas." (*C. V. Piper.*)

54680. MELINIS MINUTIFLORA Beauv. Poaceæ. **Molasses grass.**

"John Morley, of Lake Alfred, Fla., informed me that the molasses grass *(Melinis minutiflora)* was so successful on his place that he is going to get a large quantity of seed for the planting of a very considerable area of it. He said the trouble experienced by other people who had tried to use this grass was, apparently, that they did not keep it closely enough grazed or cut. When permitted to grow unmolested it is likely to get rank." *(David Fairchild.)*

"I am immensely pleased to learn of the success that Mr. Morley has had in pasturing this plant (*M. minutiflora*). While it grew extremely well at various places in Florida, everyone else has reported that the cattle would not eat it. Apparently they must be educated to it. At Mr. Burguieres's place, West Palm Beach, Fla., the grass behaves as a weed, being abundant everywhere along the fence rows." *(C. V. Piper.)*

For previous introduction, see S. P. I. No. 50162.

54681. DIOSPYROS KAKI L. f. Diospyraceæ. **Kaki.**

From Canton, Kwangtung, China. Seeds presented by C. O. Levine, acting Director of Agriculture, Canton Christian College, through F. A. McClure. Received January 24, 1922.

Kai sam tsz (chicken-heart persimmon).

A variety of kaki from southern China which may be capable of cultivation in southern Florida.

54682. ANNONA sp. Annonaceæ.

From Caracas, Venezuela. Seeds presented by H. Pittier. Received January 27, 1922.

"Seeds of the so-called *chirimoriñon.* The fruit is small for its kind, about 12 centimeters (5 inches) long, ovoid-oblique, and almost pointed at the apex. At the base the scales are very numerous, imbricate, and mostly small; toward the apex they are much larger and scattered in the shape of rounded protuberances. It is by far the most delicious among the sweetsops, the fiberless flesh having just the consistence of thickish cream and a delightful flavor suggestive of strawberry ice cream without any of the 'goût de pommade' of either *Annona reticulata* or *A. cherimola.* The seeds seem to be very few in each fruit." (*Pittier.*)

"Probably tropical in its requirements, and suited for cultivation in the United States only in southern Florida." (*Wilson Popenoe.*)

54683 and 54684. COFFEA spp. Rubiaceæ. **Coffee.**

From Tananarive, Madagascar. Seeds presented by the Nanisans Experiment Station through James J. Carter, American consul. Received January 23, 1922.

"Species of coffee cultivated in the center of the island of Madagascar. Furnished by the Nanisans Experiment Station upon the order of the inspector general of the Agricultural and Forestry Service."

54683. COFFEA ARABICA L.

"*Café vondrona à grains allongés* (long-grain, small-leaf, tufted coffee)."

54683 and 54684—Continued.

54684. COFFEA LIBERICA Bull.

"*Café lava-tanana à gros grains* (large-grain, large-leaf, and long-branch coffee)."

54685. GOSSYPIUM NANKING Meyen. Malvaceæ. Cotton.

From Unsan, Pingyang Province, Chosen. Seeds presented by A. Welhaven, Oriental Consolidated Mining Co., through Ransford S. Miller, American consul general, Seoul. Received February 7, 1922.

"This seed was grown in Pukchin Myon, Unsan, northern Pingyang Province (40° 10′ N., 125° 55′ E.), and is supposed to be the best produced locally." (*Welhaven.*)

54686. DIOSCOREA TRIFIDA L. f. Dioscoreaceæ. Yampi.

From Gatun, Canal Zone. Tuber presented by A. V. Mitchell, through the Federal Horticultural Board. Received February 13, 1922.

"A pink-skinned, white-fleshed *yampi* of good quality. The tubers are long-oval to club shaped and from 3 to 8 ounces each in weight." (*R. A. Young.*)

For previous introduction, see S. P. I. No. 42053.

54687. MESUA FERREA L. Clusiaceæ.

From Buitenzorg, Java. Seeds presented by Dr. W. M. Docters van Leeuwen, director, Botanic Garden. Received February 3, 1922.

A very handsome, pyramidal tree native to the hot moist regions of Ceylon, India, and the Malay Peninsula. The young leaves which appear twice a year are intense blood red at first, passing through delicate shades of pink into dark green. The large, white, delicately scented flowers are produced profusely in April and May. The kernels yield as much as 70 per cent of very rich, clear, red-brown, somewhat perfumed oil which might be used for confectionery. The oil is used medicinally as a lotion. The dark-red wood is extremely hard and heavy and when well seasoned is used for beams, masts, tool handles, in bridge construction, etc. Railway ties made of this wood were not attacked by white ants and were quite sound after four years of use. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 260*, and *Pearson, Commercial Guide to the Forest Economic Products of India, p. 68.*)

54688. GOSSYPIUM BARBADENSE L. Malvaceæ. Cotton.

From Cairo, Egypt. Seeds presented by James A. Prescott, Sultanic Agricultural Society. Received January 19, 1922.

Pilion.

Introduced for department specialists engaged in cotton breeding.

54689. OPUNTIA FICUS-INDICA (L.) Mill. Cactaceæ. Indian fig.

From Valetta, Malta. Cuttings presented by Società Economica Agraria, through Cary Loop, American consul. Received February 3, 1922.

These cuttings were received in response to a request for propagating material of a nearly spineless variety introduced from Malta in 1903 (under S. P. I. No. 9352) and said to bear yellowish orange fruits the size of a goose egg, of good flavor, and containing less than a dozen seeds.

For previous introduction, see S. P. I. No. 9352.

54690. MANGIFERA INDICA L. Anacardiaceæ. Mango.

From Honolulu, Hawaii. Plants presented by J. M. Westgate, agronomist in charge, Agricultural Experiment Station. Received January 17, 1922.

"*Victoria.* The original tree, Victoria No. 9, is a seedling growing on the residence property of Thomas G. Thrum, 1508 Thurston Avenue, Honolulu. During the eighties a number of mango seeds were brought from the West Indies

by Joseph Marsden, a Government official of Hawaii. Among the seedlings developed from the introduced seeds was one known as No. 9. In 1897 a seed of this No. 9 was given to Mr. and Mrs. George Ashley, who then lived at 1508 Thurston Avenue. Mrs. Ashley germinated this seed, setting it in the front yard in its present location on June 20, 1897, the date of the Diamond Jubilee of Queen Victoria of England. For this reason the tree was called 'Victoria No. 9.' When it fruited it was discovered that the fruit was different from any of the mangos growing in Hawaii, particularly in color. Its qualities are superior to any of those mangos formerly brought to Hawaii by Mr. Marsden.

"The tree has proved to be very prolific, often producing as many as three distinct crops per year. The fruits are but little clustered, generally hanging singly on individual stems. From the time the fruits set they are red, becoming more brilliant on ripening. Like some other mangos, the Victoria No. 9 reproduces its quality of fruit fairly accurately on seedling trees. There are a number of seedlings in various parts of the islands which are reported as being fairly true in fruit production to the parent tree. The variety may be perpetuated without question by grafting.

"Description of the fruit: Size medium; weight about 9 ounces; shape oblong, slightly -shaped and necked somewhat at stem end; apex broadly rounded with curve ending in a small blunt beak which sometimes contains a small holelike depression; color when ripe brilliant vermilion shaded over yellow ground color; yellow ground color most evident at apex. Surface marked with small yellow dots which become overcast where red is deepest. Shoulder of fruit has delicate powdery bloom. Skin is of medium thickness, tough so as to peel well. Odor a pleasing fragrance. Ripe flesh of deep rich yellow color, good texture; juice sweet acid and of flavor of the Pirie mango. Seed small, weight three-fourths of an ounce. Marketing qualities ranking among best varieties in Hawaii." (*Willis T. Pope.*)

54691. Flacourtia euphlebia Merr. Flacourtiaceæ.

From Manila, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Bureau of Agriculture, through Sr. Adn. Hernandez, Secretary of Agriculture and Natural Resources. Received January 27, 1922.

"*Lanagon.* A small tree, native to these islands, bearing in profusion fruits very similar in appearance and flavor to those of *Flacourtia cataphracta.* They can probably also be used in the same way as those of the latter, i. e., for jelly making." (*Wester.*)

54692 to 54698.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received January 31, 1922.

54692. Bucklandia populnea R. Br. Hamamelidaceæ.

One of the most beautiful of the forest trees of the Sikkim Himalayas at altitudes of 4,000 to 6,000 feet. The glossy green leathery leaves are red veined and red petioled. The young leaves are more or less deep blood red, unspotted beneath, but shot with green above. The remarkable long red stipules resemble those of Liriodendron. (Adapted from *Curtis's Botanical Magazine, pl. 6507.*)

54693. Bupleurum fruticosum L. Apiaceæ.

"An evergreen, quite hardy shrub." (*Proschowsky.*)

This ornamental European shrub is interesting because of its densely leafy branches and continuous bloom. The persistent leathery leaves resemble those of some of the shrubby Hypericums in appearance and arrangement. The ends of the branches are tipped with broad umbels of yellow flowers that are in bloom more or less continuously from late April to September. In southern Europe, Syria, and northern Africa this plant is found growing wild in sterile soil on dry hills. (Adapted from *Bonnier, Flore Complète de France, Suisse, et Belgique, vol. 4, p. 13.*)

For previous introduction, see S. P. I. No. 27189.

54692 to 54698—Continued.

54694. PISTACIA LENTISCUS L. Anacardiaceæ.

"This shrub is common in southern Europe, forming most of the Mediterranean 'maquis.' It produces a gum used by the Arabs as a perfume. It is always a shrub in the wild state, but I have seen a garden specimen which formed a very beautiful tree 7 to 8 meters (23 to 26 feet) in height, with a large, dense, rounded crown of beautiful evergreen foliage. The plant will grow in the worst soil and stands any amount of drought." (*Proschowsky.*)

An edible oil, known as shinia oil (used as a substitute for olive oil), is obtained from the berries. As prepared by the usual primitive methods the oil does not retain its sweetness for longer than three months after its extraction. The yield is said to be very satisfactory, being about 18 per cent. (Adapted from *Cyprus Agricultural Journal, vol. 13, pt. 1, p. 28.*)

For previous introduction, see S. P. I. No. 51698.

54695. SOLANUM PIERREANUM Paill. and Bois. Solanaceæ.

"A species with beautiful, large, fire-red, long-lasting fruits." (*Proschowsky.*)

Olombé. The Pahouins, of Gabon Colony, French Equatorial Africa, eat the brilliant-red fruits which are the size of a small walnut and are borne singly or in pairs. The plant is a good ornamental for southern climates. (Adapted from *Bulletin de la Société d'Acclimatation de France, vol. 37, p. 483,* and from *Revue Horticole, vol. 62, p. 343.*)

54696. SOLLYA HETEROPHYLLA Lindl. Pittosporaceæ.

"A beautiful blue-flowered climber." (*Proschowsky.*)

This handsome Australian climbing shrub somewhat resembles bittersweet (*Solanum dulcamara*) in habit, but much surpasses that plant in its larger and more beautiful lilac or purple bell-shaped blossoms in few-flowered clusters, which cover the plant with a profusion of bloom in June and July. The red calyxes and pedicels and the persistent dark-green lanceolate leaves form a charming contrast with the flowers. Propagation is by cuttings, layering, and seeds, the last being very numerous in the long spindle-shaped pods. (Adapted from *Revue d'Horticulture Belge et Étrangère, vol. 21, p. 253.*)

54697. THRYALLIS BRASILIENSIS L. Malpighiaceæ.
(*Galphimia brasiliensis* Juss.)

An ornamental Brazilian shrub, 12 to 18 inches in height, with opposite leaves and terminal racemes of small yellow flowers. The plant bears a superficial resemblance to some of the small Hypericums. The species of Thryallis are cultivated to some extent in Europe, but are little known in America.

54698. ZANTHOXYLUM ALATUM PLANISPINUM (Sieb. and Zucc.) Rehd. and Wils. Rutaceæ.

A Japanese shrub 7 to 13 feet high, much branched at the base, sometimes with a short trunk. The dark-brown spreading branches, drooping a little at the tips, bear stout, straight spines in pairs and evergreen pinnate leaves dark green above and paler beneath. The small red fleshy fruits are persistent and emit a very agreeable aromatic odor when bruised. The shrub should be more extensively planted as an ornamental; in addition it makes a very formidable hedge. Propagation is by seeds or cuttings. (Adapted from *Revue Horticole, vol. 85, p. 17.*)

54699. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. Orange.

From Paramaribo, Dutch Guiana. Budwood presented by W. L. Kann, Pittsburgh, Pa. Received February 7, 1922.

"Budwood of a very good orange from the Fernandez estate, La Liberté. According to Mr. Kann, one tree bore 700 fruits. The trees are now 7 or 8 years old and have borne for four or five years. The fruit ripens in July and August." (*David Fairchild.*)

54700. CUCURBITA FICIFOLIA Bouche. Cucurbitaceæ. **Chilacayote.**

From San Jacinto, Distrito Federal, Mexico. Seeds presented by Sr. A. Brambila, Department of Agriculture. Received February 14, 1922.

"The *chilacayote*, often called *chiberre* in Costa Rica, is cultivated in various parts of Mexico and Central America, where it is also native. The stems spread to a considerable distance (20 feet or more) from the main plant, the leaves are roundish kidney shaped, and the flowers are pale yellow. The fruits resemble in a general way small watermelons; the white flesh is edible only after cooking and is used for conserves and pies." (*P. G. Russell.*)

For previous introduction, see S. P. I. No. 42970.

54701. RUBUS MACROCARPUS Benth. Rosaceæ. **Colombian berry.**

From Bogota, Colombia. Seeds presented by E. O. Wolcott. Received February 15, 1922.

For description and previous introduction, see S. P. I. No. 51706. Also see article by Wilson Popenoe in the Journal of Heredity, vol. 11, pp. 194 to 202.

54702. EUGENIA KLOTZSCHIANA Berg. Myrtaceæ. **Pera de campo.**

From Lavras, Minas Geraes, Brazil. Seeds presented by Benjamin H. Hunnicutt, director, Instituto Evangelico, Escola Agricola de Lavras. Received February 7, 1922.

For description and previous introduction, see S. P. I. No. 37492; for further description see Dorsett, Shamel, and Popenoe, The Navel Orange of Bahia; with Notes on Some Little-Known Brazilian Fruits (U. S. Department of Agriculture Bulletin No. 445, p. 32.)

54703. ALEURITES MONTANA (Lour.) Wilson. Euphorbiaceæ. **Mu-oil tree.**

From Hongkong, China. Seeds presented by H. Green, superintendent, Botanical and Forestry Department. Received February 28, 1922.

"This is the *mu-yu-shu* (literally, wood-oil tree), of southern China. It is less hardy than the tung-oil tree, *Aleurites fordii*, and 2-year-old specimens growing at Tallahassee, Fla., were killed by cold in February, 1917. The oil is practically identical with tung oil. The fruit and leaves are different in appearance from those of *A. fordii*." (*R. A. Young.*)

For previous introduction, see S. P. I. No. 50353.

54704. VOANDZEIA SUBTERRANEA (L.) Thouars. Fabaceæ.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received February 15, 1922.

Obtained originally from the colony of Senegal, French West Africa.

For description and previous introduction, see S. P. I. No. 49881.

54705. CASUARINA SUMATRANA Jungh. Casuarinaceæ.

From Singapore, Straits Settlements. Seeds presented by I. Henry Burkill, director, Botanic Gardens, through Dr. P. J. S. Cramer, chief, Plant-Breeding Station, Buitenzorg. Received February 18, 1922.

"The most beautiful of the Casuarinas and one of the most decorative of tropical trees. It has a thick pyramidal habit and is a beautiful shade of green." (*Cramer.*)

For previous introduction and description, see S. P. I. No. 37119.

54706. CASSIA GRANDIS L. f. Cæsalpiniaceæ.

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, in charge, Department of Botany and Forestry, Experiment Station of the Hawaiian Sugar-Planters' Association. Received February 15, 1922.

The South American *pink shower*, an exceedingly handsome tree 50 feet or more in height, which is cultivated in many tropical countries for its beautiful blooms. The abundant racemes of deep-pink flowers, an inch across, are produced in February and March, during which time the tree is deciduous, or partly so. The pinnate leaves and young branches are covered with fine, soft, copper-colored hair. (Adapted from *Rock, The Ornamental Trees of Hawaii, p. 104.*)

For previous introduction, see S. P. I. No. 52401.

54707 and 54708. Trifolium pratense L. Fabaceæ. Red clover.

From Helsingfors, Finland. Seeds purchased by Leslie A. Davis, American consul. Received February 21, 1922.

54707. *Punga-apila*, from Suomi. From Keskusosuusliike Hankkija, r. l.

54708. *Sydfinskt*, from Centralandelslaget Labor m. b. t.

54709 to 54725. Prunus mume Sieb. and Zucc. Amygdalaceæ. Japanese apricot.

From Okitsu, Shizuokaken, Japan. Budwood presented by Prof. T. Onda, Bureau of Horticulture, Imperial Agricultural Experiment Station. Received February 24, 1922. Quoted notes by Professor Onda.

The "mume," or Japanese apricot, is found throughout the Japanese Empire, where it is both wild and cultivated. In height it ranges from 10 to 25 feet, reaching its maximum development in the northern parts of its native country. Before the leaves appear in the spring the tree is covered with a profusion of attractive blossoms which are white in the wild forms, while in the cultivated varieties the color varies from white to pink, with occasional tinges of green or yellow. The most desirable varieties are those with double flowers and dwarf habit; the latter characteristic is of much importance among the Japanese because of their well-known liking for dwarf trees.

In favorable seasons the "mume" blooms at the beginning of February, and one may see the altars and homes decorated with flowering branches as a symbol of approaching spring. Pilgrimages are made to certain trees which are considered sacred because of associations with divine princes or national heroes, and cuttings from these trees accordingly assume great value in all parts of the land. The tree also plays an important rôle in Japanese literature.

The fruits ripen in June; they are exceedingly sour and are eaten only in the form of pickles. These are consumed in large quantities in Japan, being prepared with the leaves of a mint, *Perilla arguta.* which gives them a reddish color and an aromatic taste. (Adapted from *Revue Horticole, vol. 57, p. 564,* and *note under S. P. I. Nos. 9211 to 9216.*)

"The 15 'mume' trees at my home in Maryland are among the most admired plants which I have. Since this species is early flowering and perfectly hardy, it should have a great future in this country. If we can propagate it as we are now propagating the Japanese flowering cherries, I believe we can make it quite as popular in America as the latter have become. The fact that the 'mume' blossoms earlier than the cherry, that the tree does not grow quite so large, and that the flowers are fragrant, adapts it particularly for planting in dooryards." (*David Fairchild.*)

54709. "*Beni Kaga.* An early-flowering variety with medium-sized white flowers followed by medium-sized fruits."

54710. "*Beni Sashi.* An early-flowering variety with small white flowers and small red fruits."

54711. "*Bungo.* A late-flowering variety with large light-red flowers and large fruits."

For previous introduction, see S. P. I. No. 45878.

54712. "*Hanakami.* A midseason variety with rather small light-red flowers and medium-sized light-brown fruits."

For previous introduction, see S. P. I. No. 45879.

54709 to 54725—Continued.

54713. "*Inkyo.* An early-flowering variety with medium-sized white flowers and large fruits."

54714. "*Joshu.* A midseason variety, with small, light-red, double flowers and large fruits."

54715. "*Kichirobei.* A midseason variety with medium-sized white flowers followed by large fruits."

53716. "*Ko mume.* A midseason variety with rather small white flowers and very small fruits."

For previous introduction, see S. P. I. No. 45881.

54717. "*Koshu.* A rather late-flowering variety producing small white flowers and very small fruits."

54718. "*Masui.* A late-flowering variety with rather small white flowers; the fruits are large."

54719. "*Rinshu.* A double-flowered variety, with medium-sized, light-red flowers produced late in the season. The fruits are large."

For previous introduction, see S. P. I. No. 45876.

54720 and 54721. "*Shidare.*"

54720. "A red-flowered form with drooping branches and rather small light-red flowers produced late in the season."

54721. "A white-flowered midseason form with drooping branches, rather small flowers, and small fruits."

54722. "*Shira Kaga.* A variety with medium-sized, clear-white flowers produced rather late in the season. The fruits are large."

For previous introduction, see S. P. I. No. 45880.

54723. "*Tama mume.* A midseason variety producing medium-sized white flowers with green calyxes. The rather large fruits are clear green."

54724. "*Unryu.* An early-flowering double variety suitable as an ornamental pot plant. The very crooked branches bear medium-sized white flowers."

54725. "*Yoro.* A rather late-flowering variety producing rather small light-red flowers and medium-sized fruits."

For previous introduction, see S. P. I. No. 45877.

54726. Hydnocarpus anthelminthica Pierre. Flacourtiaceæ.

Maikrabao.

From Chiengmai, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received February 25, 1922.

"(December 29, 1921.) This is a large tree about 50 to 80 feet in height, found along stream beds north of Chiengmai in northern Siam, and is apparently a new variety. It differs from the southern Siamese form in the fruit, which is chestnut brown and neither velvety nor strongly lenticellate. The staminate flowers are on long pedicels and have no rudimentary ovary, but the pistillate flowers, which are on shorter pedicels and occur in the axils of young (this year's) shoots, have five short sterile anthers. The fruits are from 11 to 12 inches in circumference and contain from 20 to 35 seeds. They ripen in November, but fruits may be found on the trees all the year round." (*Rock.*)

This tree yields an oil similar to that of *Taraktogenos kurzii;* the latter is, however, the source of the true chaulmoogra oil.

54727. Ampelocissus imperialis (Miquel) Planch. Vitaceæ.

(*Vitis imperialis* Miquel.)

From Buitenzorg, Java. Seeds presented by Dr. W. M. Docters van Leeuwen, director, Botanic Gardens. Received February 18, 1922.

"The small spherical 2-seeded berries are sour, but good for jelly; however, the yield is so small that the plant has no cultural interest as a fruiting vine." (*G. C. Husmann.*)

An ornamental vine from tropical and subtropical Asia, with thick heart-shaped leaves resembling those of a begonia, and long-stalked clusters of deep-violet flowers.

54728. Trifolium pratense L. Fabaceæ. Red clover.

From Naples, Italy. Seeds purchased from the Agenzia Agraria, Nappi & Mascia, of Naples, through Homer M. Byington, American consul. Received February 20, 1922.

Medium red-clover seed known as *double cut* or *early clover*, introduced for growing in comparison with American-grown seed.

For previous introduction, see S. P. I. No. 54708.

54729 to 54731. Medicago sativa L. Fabaceæ. Alfalfa.

From Valence, France. Seeds presented by Téziér Frères. Received February 18, 1922. Quoted notes by Téziér Frères.

"Alfalfas from the principal producing districts of France. These strains are all more or less similar, but the difference in climate of the sections in which they are grown has slightly altered their characters, and some are a little more hardy than the others."

54729. "*Alps.* We consider the *Alps* strain, which is grown in the mountains, especially noteworthy."

54730. "*Poitou.*" 54731. "*Provence.*"

54732 to 54734.

From Okitsu, Shizuokaken, Japan. Seeds presented by Prof. T. Onda, Bureau of Horticulture, Imperial Agricultural Experiment Station. Received February 24, 1922.

Introduced for experiments by department specialists.

54732. Amaranthus caudatus L. Amaranthaceæ. **Love-lies-bleeding.**

Himogeito.

54733. Amaranthus gangeticus melancholicus (L.) Voss. Amaranthaceæ. **Joseph's-coat.**

Hageito.

54734. Kochia scoparia (L.) Schrad. Chenopodiaceæ. **Belvedere.**

Hahakigusa.

54735. Rosa gentiliana Lev. and Van. Rosaceæ. Rose.

From Witcombe, Gloucester, England. Seeds presented by Lady Harriet Thiselton-Dyer. Received March 1, 1922.

A vigorous bush rose from western China, which makes tangled bunches 12 to 15 feet high and 15 to 20 feet in diameter. The 5-foliolate leaves are dark glossy green; the pure-white single flowers, about an inch in diameter and delightfully fragrant, are borne in broad clusters and unless damaged by storms will continue to bloom for nearly two months. The bush should be given an isolated position where it can be left to develop; it should not be pruned. (Adapted from *The Garden Magazine, vol. 23, p. 339.*)

Received as *Rosa cerasocarpa*, which is now referred to *R. gentiliana.*

For previous introduction, see S. P. I. No. 47359.

54736 and 54737.

From Hobart, Tasmania. Seeds collected by Victor O. Fletcher, Newnham, near Launceston, and presented by L. A. Evans, Acting Director of Agriculture. Received March 9, 1922.

54736. DANTHONIA SETACEA R. Br. Poaceæ. **Wallaby grass.**

"A good native grass." (*Evans.*)

A valuable perennial pasture grass frequently less than a foot high, common in many localities in Australia and New Zealand. The soft narrow leaves are mostly short and erect and either smooth or somewhat pubescent with spreading hairs. In the spring the dense, narrow, branching panicles glisten with white-haired flowering glumes.

The species of Danthonia are probably the most important economic grasses of New South Wales. In New Zealand they are recommended only for the poorer soils of the South Island; but in the North Island they are considered very valuable pasture grasses and are credited with carrying two sheep to the acre. In New South Wales the Danthonia grasses are commonest on the table-lands and slopes, where they constitute about 90 per cent of the dominant grasses in well-managed pasture, sometimes, indeed, monopolizing the whole situation. In coastal districts they are common in newly cleared areas, in scrub lands, and very often in well-worked fallowed fields. In the western districts they are just a little less abundant than on the slopes and table-lands. The Danthonia grasses can therefore be termed the commonest and most widely distributed grasses of New South Wales, and without them our pastoral industry would suffer considerably.

The danthonias are tussocky in habit, but they stool considerably and will stand a great amount of grazing. Some of the species are rather hairy, particularly those of the western plains, but evidently this is no drawback as far as palatability is concerned. During the hot summer months the grass dies off considerably, but can be revived in a wonderful manner by rain.

The value of the Danthonia grasses in respect to palatability, both for cattle and sheep, has been well proved by every stockman. The forms that grow abundantly in the coastal districts (*Danthonia longifolia* and *D. racemosa* types) fatten horses and dairy stock very quickly; while on the table-lands and slopes and in the interior some of the best sheep in New South Wales are raised on Danthonia grasses alone. Even when other grasses are completely dried up, the danthonias will produce a fair amount of greenness in the bottom growth, and it is due to such feed that the Riverina can carry excellent sheep during a dry spring and summer. (Adapted from *Bentham, Flora Australiensis, vol. 7, p. 595,* and *Agricultural Gazette of New South Wales, vol. 31, p. 24.*)

For previous introduction, see S. P. I. No. 53115.

54737. THEMEDA AUSTRALIS (R. Br.) Stapf. Poaceæ. **Kangaroo grass.**

"*Kangaroo* grass is common in many places in Australia and grows to a great height when left unmolested for a time. A peculiarity of this grass, and one which seriously hinders its multiplication, is the fact that it bears in its large ornamental flower heads very few fertile seeds. If the farmer would only recognize this and remove his stock during spring and summer from the fields in which kangaroo grass has a hold, a valuable fodder grass would be conserved; otherwise, there is a serious danger of its being eaten out. The proof of this assertion can be seen by observing the rich growth of kangaroo grass within many railway inclosures, while without not a blade is to be seen. One would infer from its height (it sometimes grows tall enough to hide sheep) and consequent coarseness that it would not be favored by stock, but they are extremely partial to it." (*Journal of the Department of Agriculture of Victoria, vol. 15, p. 713,* under *Anthisteria imberbis.*)

54738. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung-oil tree.**

From Pineville, La. Seeds presented by Albert R. Arey, superintendent, Alexandria National Cemetery. Received February 27, 1922.

Seeds of the tung-oil tree, grown at Pineville, La., and numbered for convenience in distribution.

For previous introduction, see S. P. I. No. 50635.

54739. Trifolium pratense L. Fabaceæ. Red clover.

From Copenhagen, Denmark. Seeds presented by H. N. Knudsen, Secretary, Danish Royal Agricultural Society. Received March 6, 1922.

Tystofte No. 40 originated in a 2-year plat of *Roscndal* clover. Seed of this variety was sown in 1900, and the clover was thus subjected to the hard winter of 1901. In 1902 the strongest plants from this test were selected, one of which was *No. 40*. Later this strain was compared with others in several tests. In three of our tests, all the clovers made vigorous growth during the first year, and in this respect *No. 40* averaged well above the others. In all four tests *No. 40* gave the largest crop, fully 20 per cent better than that of the next best. These results agree well with the results of earlier tests at Lyngby and Tystofte in which this strain decidedly surpassed all others. (Adapted from *Beretning fra Statens Forsögsvirksomhed i Plantekultur, No. 95, p. 401.*)

54740. Rosa gentiliana Lev. and Van. Rosaceæ. Rose.

From Witcombe, Gloucester, England. Cuttings presented by Lady Harriet Thiselton-Dyer. Received March 1, 1922.

Received as *Rosa cerasocarpa*, which is now referred to *R. gentiliana*.

For previous introduction, see S. P. I. No. 54735.

54741. Diospyros kaki L. f. Diospyraceæ. Kaki.

From Summerville, S. C. Scion presented by John B. Gadsden. Received March 2, 1922.

"The finest variety of persimmon I have ever seen. The fruit is conical, deep orange, with a small smudge of black near the point, seedless, of excellent flavor, and ripening about December 1. Our specimens weigh from 14 to 17 ounces." (*Gadsden.*)

54742 to 54747.

From Chefoo, Shantung, China. Seeds presented by A. Sugden. Received February 27, 1922. Quoted notes by Mr. Sugden.

54742. Hordeum vulgare coeleste L. Poaceæ. Barley.

"Winter-sown barley used in the manufacture of straw braid. Grown 200 to 300 miles west of Chefoo."

54743 and 54744. Oryza sativa L. Poaceæ. Rice.

54743. "Winter-sown glutinous rice grown at Wenteng, 60 miles from Chefoo."

54744. "Winter-sown glutinous rice grown at Chefoo."

54745 to 54747. Triticum aestivum L. Poaceæ. Common wheat. (*T. vulgare* Vill.)

54745. "Wheat grown 200 to 300 miles west of Chefoo, used in the manufacture of straw braid."

54746. "Wheat from the far western part of the Province of Shantung."

54747. "Winter-sown local wheat which makes good flour."

54748 to 54760.

From Harbin, Manchuria. Seeds purchased by B. W. Skvortzow. Received February 28, 1922. Quoted notes by Mr. Skvortzow.

Introduced for experimental work by specialists of the Department of Agriculture.

54748 to 54760—Continued.

54748. ABUTILON THEOPHRASTI Medic. Malvaceæ.
(*A. avicennae* Gaertn.)

"Manchurian jute."

For previous introduction, see S. P. I. No. 39361.

54749 and 54750. ECHINOCHLOA CRUSGALLI EDULIS Hitchc. Poaceæ. **Barnyard millet.**

54749. A large-seeded variety.

54750. A small-seeded variety.

For previous introduction, see S. P. I. No. 54440.

54751. MEDICAGO FALCATA L. Fabaceæ.

"Found growing wild."

For previous introduction, see S. P. I. No. 42018.

54752 to 54755. PANICUM MILIACEUM L. Poaceæ. **Proso.**

54752. Straw-colored variety.

54753. White variety.

54754. Light-brown variety.

54755. Dark-brown variety.

For previous introduction, see S. P. I. No. 48724.

54756. PRUNUS SALICINA Lindl. Amygdalaceæ. **Japanese plum.**

"Cultivated by Chinese."

This is a strong-growing small tree, native to China but cultivated in Japan, with showy white flowers and rather pointed fruits which are usually yellow or light red. Because of its great hardiness, vigor, and fruiting qualities, it is introduced for experimental work by specialists of the Department of Agriculture.

For previous introduction, see S. P. I. No. 41257.

54757. PRUNUS TOMENTOSA Thunb. Amygdalaceæ. **Bush cherry.**

"Cultivated by Chinese."

"A very vigorous bush cherry which flowers much earlier than other cherries and bears when very young. Selected seedlings 3 to 4 years old have borne 15 to 20 quarts of fruits which make very fine jelly. In regard to the hardiness of this species, it may be stated that trees have successfully withstood seven winters in North Dakota. The tree is somewhat susceptible to brown-rot on the twigs." (*George M. Darrow.*)

For previous introduction, see S. P. I. No. 46534.

54758 and 54759. VITIS AMURENSIS Rupr. Vitaceæ. **Amur grape.**

Apparently two wild forms of the Amur grape.

54758. No. 1. 54759. No. 2.

For previous introduction, see S. P. I. No. 36753.

54760. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

For previous introduction, see S. P. I. No. 48793.

54761. ZIZANIA LATIFOLIA (Griseb.) Stapf. Poaceæ. **Wild rice.**

From Kew, Surrey, England. Roots presented by Sir David Prain, director, Royal Botanic Garden. Received February 23, 1922.

Introduced for special experimental work in connection with *Zizania aquatica.*

For previous introduction, see S. P. I. No. 44069.

54762 to 54766. PANICUM MILIACEUM L. Poaceæ. **Proso.**

From district of Iwate, Japan. Seeds presented by Prof. Takeo Kusano, Kagoshima Imperial College of Agriculture and Forestry, Kagoshima, Japan. Received March 8, 1922. Quoted notes by Professor Kusano.

54762. Mixture of four varieties of millet.

54763. "*Hoten-kuro-kibi.* Black millet originally from Mukden, Manchuria."

54764. "*Ki-kibi.* Yellow millet."

54765. "*Shiro-kibi.* White millet."

54766. "*Zairai-kuro-kibi.* Black millet, much used for planting in this district."

54767. PHOENIX OUSELEYANA Griffith. Phœnicaceæ. **Palm.**

From Calcutta, India. Seeds presented by Percy Lancaster, secretary, Agricultural and Horticultural Society of India. Received March 7, 1922.

An armed palm with a short stem up to 12 feet in height and 9 inches in diameter, densely covered with the stumps of leafstalks. The edible fruits are orange colored until fully ripe, when they become black. The pinnate leaves are 4 to 8 feet long with pliable clustered leaflets more or less four ranked. Native to the southern slopes of the Himalayas and to the East Indies. (Adapted from *Brandis, Indian Trees, p. 645.*)

54768. EUGEISSONA TRISTE Griffith. Phœnicaceæ. **Palm.**

From Buitenzorg, Java. Seeds presented by Dr. W. M. Docters van Leeuwen, director, Botanic Garden. Received March 10, 1922.

A stemless, tufted palm common in the hill forests of Malakka. The numerous spreading leaves, 15 to 20 feet long, are occasionally used for thatching and for making mats; the long petioles are armed with brown ascending spines. The terminal panicle, 4 to 6 feet long, is furnished below with much-armed sheaths, and even the long-pointed, often whiplike spathes are armed. The densely scaly, ovate fruits are generally rough with the recurved edges of the dark-brown scales. Malayan name, *bertam.* (Adapted from *Calcutta Journal of Natural History, vol. 5, p. 10.*)

54769. UAPACA KIRKIANA Muell. Arg. Euphorbiaceæ.

From Mount Silinda, Southern Rhodesia, Africa. Seeds presented by Dr. W. L. Thompson, Africa Inland Mission. Received January 4, 1922.

"*Majanji,* an indigenous fruit of great value to our natives here which perhaps saves many lives in famine times. It is of delicious flavor and very healthful, so far as I am aware. The great drawback to its use by Europeans is that the seeds occupy so large a part of the bulk of the fruit. Still we often enjoy eating them. The trees grow about 20 feet high, often on rocky hillsides not well adapted to cultivation. The fruit of each tree has its own peculiarities of shape and size, as well as in size of seeds as compared with size of fruit, etc. If they could be improved to make the fruit larger and seeds smaller, I think they would be quite attractive." (*Thompson.*)

54770 to 54775. RIBES VULGARE Lam. Grossulariaceæ. **Garden currant.**

From Barnham, England. Plants purchased from The Barnham Nurseries, Ltd. Received January 5, 1922.

54770. *Comet* (red). Said to be a very fine new variety, of large size, robust habit, and an immense cropper; not so acid as some of the older sorts.

54771. *New Red Dutch.* Said to be a most reliable sort, spreading habit, very fine bearing; late.

For previous introduction, see S. P. I. No. 41988.

54770 to 54775—Continued.

54772. *Perfection* (Laxton, new). Reported as a remarkably fine red variety of exceptionally vigorous growth; a very heavy cropper, with long bunches of large berries.

54773. *Raby Castle* (May's Victoria, or Cherry). Reported to be a large-fruited strong grower.

For previous introduction, see S. P. I. No. 42245.

54774. *Red Dutch.* Said to be the variety usually grown.

For previous introduction, see S. P. I. No. 42240.

54775. *Red Grape.* Reported a very fine berry and heavy cropper.

For previous introduction, see S. P. I. No. 42244.

54776. Guilielma utilis Oerst. Phœnicaceæ. Pejibaye.

(*Bactris utilis* Benth. and Hook.)

From San Jose, Costa Rica. Seeds purchased through Sr. Otón Jimenez. Received January 3, 1922.

"In Costa Rica the pejibaye has been cultivated by the Indians since remote antiquity. In the lowlands of Colombia, Venezuela, and Ecuador it forms a staple foodstuff of numerous aboriginal tribes. The Jíbara Indians of Ecuador hold the fruit in such esteem that the ripening season is celebrated annually by a feast of several days' duration.

"This palm is pinnate leaved and reaches a maximum height of about 60 feet. Its straight, slender stem, commonly about 6 inches thick, is armed from the ground upward with stiff, very sharp black spines about 2 inches long. The leaves, which are graceful in appearance, especially when the plant is young, are commonly 8 to 12 feet in length and deep green.

"The species is monœcious, the staminate and pistillate flowers being produced upon the same raceme; the latter occur scattered among the former, and both are small, sessile, and yellow-white. The racemes, which are produced from the trunk of the palm immediately below or among the lower leaves and are protected by erect spathes, are stout and 18 to 24 inches long.

"The flowers usually appear during April, May, and June in the lowlands of Costa Rica, somewhat later in the highlands. The first fruits mature in September; and from this month until March or April there are usually ripe fruits on the plant, provided the racemes are not cut when the first fruits reach maturity. The long time which the fruits will remain on the palm in good condition is a noteworthy feature of the pejibaye.

"Racemes of mature fruits sometimes weigh 25 pounds or more, and five or six such racemes are often produced by the palm in a single crop. The maximum production of one palm (or, more properly speaking, one stem, since four or five stems are often allowed to grow from a common base) is about 150 pounds of fruit. It is seen, therefore, that the productiveness of the pejibaye is similar to that of the date palm.

"The individual fruits are top-shaped, conical, or ovoid, and vary from 1 to 2 inches in length. There is a wide range of variation in color, some varieties being clear light yellow, while others are deep orange or reddish orange, sometimes shading to brown. The flesh is dry and mealy, yet firm, and pale orange to yellow. The single seed is conical, about three-quarters of an inch long.

"The relatively small proportion of water contained in the fruit, the large amount of carbohydrates (mainly starch), the considerable quantity of fat, and the small size of the seed compared to the bulk of the edible portion combine to place the pejibaye among the most noteworthy of the tropical fruits. And it is not only a fruit of high food value, but it is delicious as well. We believe that it is destined to become a food plant of great importance in many tropical countries.

"Like the chestnut, which the boiled fruit strikingly resembles in texture and flavor, the pejibaye is used as a stuffing for turkey and chicken. Dried, it might be reduced to a flour which would serve various culinary uses. But to one who has eaten the freshly boiled pejibaye there is no incentive for seeking new ways of preparing the fruit for the table.

"The pejibaye is a plant adapted to tropical conditions, preferring a region where the rainfall is not excessive (75 inches annually or less). It is more adaptable than the breadfruit tree. The latter rarely succeeds in the Tropics

at altitudes greater than 2,500 feet, while the pejibaye fruits successfully in Costa Rica at all altitudes from sea level to 4,000 feet, though it is said not to bear well in the cool climate of the latter altitudes.

"It is doubtful if the species will grow successfully in a cool subtropical climate, such as that of southern California. In extreme southern Florida, however, there are probably regions where it will succeed.

"In Cuba, Porto Rico, and the other West Indian islands it should find itself entirely at home, and we recommend it for cultivation in these islands. In many parts of Brazil it should also succeed, while the Asiatic Tropics undoubtedly offer immense regions where it could be cultivated to great advantage.

"When grown from seed the pejibaye comes into bearing at an age of 6 to 8 years, and its life is considered to be 50 to 75 years or perhaps more.

"In commercial plantings pej bayes should be spaced 20 feet apart. Carlos Wercklé considers that the best system is to allow two or four suckers to develop around the base of each palm, thus forming a clump of three to five stems. Suckers invariably develop after the palm has attained a few years' growth. Some of them may be removed to extend the plantation. The finest varieties are seedless and must therefore be propagated by vegetative means." (*Wilson Popenoe* and *Otón Jimenez.*)

For a more thorough discussion of this palm, see the Journal of Heredity, vol. 12, pp. 154 to 166, April, 1921.

For illustrations of this palm and its fruit, see Plates I and II.

54777. EUGENIA DOMBEYI (Spreng.) Skeels. Myrtaceæ.
(*E. brasiliensis* Lam.) **Grumichama.**

From Port Louis, Mauritius. Seeds presented by G. Regnard. Received January 16, 1922.

"A very fine shrub, 10 to 15 feet high, with large glazed leaves and white blossoms. Fruit similar to the cherry, red, becoming black when fully ripe, with sweet, soft flesh." (*Regnard.*)

A shapely, attractive tree, the size of an orange tree, with elliptic, glossy, deep-green leaves 2 to 3 inches long. The small white flowers are followed in a month by mature fruits which are pendent, deep crimson, and the size of a cherry, with persistent green sepals. The skin is thin and delicate, and the soft melting flesh, mildly subacid like that of the Bigarreau cherry, is usually eaten fresh but may also be used to make jam or preserves. Seedlings bear when 4 or 5 years old, and the tree withstands 26° F. without injury. (Adapted from *Popenoe, Manual of Tropical and Subtropical Fruits, p. 303.*)

54778. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

From Orangedale, Fla. Seeds presented by J. C. Klein. Received January 19, 1922.

"*Datil* pepper, found in the neighborhood of St. Augustine, where it was grown almost exclusively in the gardens of the Minorcans who told me it was originally native to the island of Minorca and brought from there by the early Minorcan colonists, in 1767, to New Smyrna, St. Johns County.

"I have grown this pepper very successfully for several years. The plant is of sturdy habit, attaining a height of from 4 to 6 feet under favorable conditions. It is a most prolific bearer, next to the *Tabasco* in pungence, and an excellent variety for pepper sauce or for any purpose for which hot peppers are desired.

"Plants can be easily kept from year to year in climates where frosts are liable to occur by covering with bagging or litter, or in the North in greenhouses if only a few plants are desired. Some of my plants are nearly 5 years old." (*Klein.*)

54779. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Rome, Italy. Seeds purchased from Sr. Alberto Vivanti, through Francis B. Keene, American consul. Received January 17, 1922.

Introduced for experimental use by the Office of Forage-Crop Investigations.

54780 and 54781.

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received January 9, 1922.

Introduced for experimental use as a stock by specialists in the United States Department of Agriculture.

54780. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ. **Japanese apricot.**

For previous introduction, see S. P. I. No. 45523.

54781. PRUNUS SERRULATA Lindl. Amygdalaceæ. **Flowering cherry.**

For previous introduction, see S. P. I. No. 38206.

54782 and 54783.

From Pajahmundry, Nilgiri Hills, India. Seeds presented by William Bembower, agricultural adviser, American Evangelical Lutheran Mission. Received January 4, 1922.

54782. OLEA sp. Oleaceæ. **Wild olive.**

Wild olive collected in the hills of southern India.

54783. PSIDIUM sp. Myrtaceæ.

"Seeds of a small Psidium which grows wild in the Nilgiri and Pulney Hills of southern India. These were collected at Kotagiri, May, 1921, from a shrub 6 feet high. The plant is abundant around Coonoor." (*Bembower.*)

54784. PAHUDIA RHOMBOIDEA (Blanco) Prain. Cæsalpiniaceæ.

(*Afzelia rhomboidea* Vidal.)

From Manila, Philippine Islands. Seeds presented by Arthur T. Fischer, director of forestry, through Sr. Adn. Hernandez, secretary of Agriculture and Natural Resources. Received January 6, 1922.

"A tree up to 120 centimeters (4 feet) in diameter, straight but not tall. The wood is hard, heavy, seasons well, and is rarely attacked by termites. It is a well-known Philippine cabinet wood." (*Fischer.*)

For previous introduction, see S. P. I. No. 47210.

54785. DAVIDSONIA PRURIENS F. Muell. Cunoniaceæ.

From Brisbane, Queensland. Seeds presented by C. T. White, Government botanist. Received January 9, 1922.

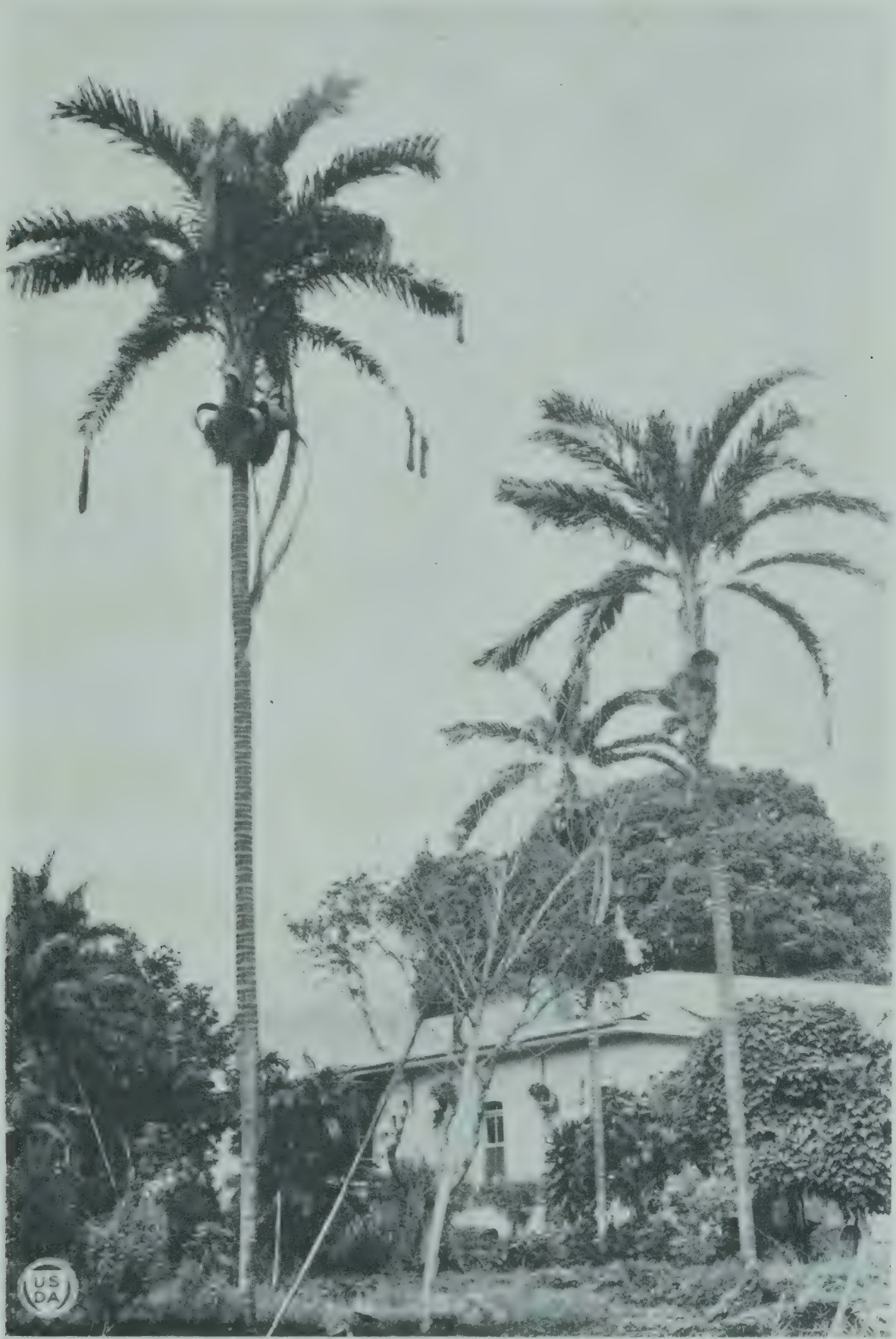
A small (30 to 40 foot) tree of graceful, erect habit with long, drooping pinnate leaves and pendulous clusters of reddish flowers. The oval fruit about the size of a goose egg is covered with short stiff hairs. Rubbing with a rough cloth quickly and easily removes these and exposes the smooth, plumlike, purple skin. The soft, fleshy pulp has a rich purple color and a sharply acid flavor; it contains a few flat, irregularly shaped seeds, which are small for the size of the fruit, a feature not frequently occurring in wild fruits. This "plum," as it is called, is largely used by settlers in Queensland for making jam and jelly. The hard, dark-brown, close-grained wood is tough and durable and is used for tool handles and mallets. This tree is native to tropical Queensland, and a smaller form is found in southern Queensland and adjoining parts of New South Wales. (Adapted from *F. M. Bailey, Queensland Agricultural Journal, vol. 1, p. 471,* and from *The Queensland Flora, p. 538.*)

54786 and 54787. RIBES VULGARE Lam. Grossulariaceæ.

Garden currant.

From Hereford, England. Plants purchased from King's Acre Nurseries. Received January 14, 1922.

Introduced for experimental work by Department of Agriculture specialists.



THE PEJIBAYE PALM, THE SOURCE OF A STAPLE FOOD IN COSTA RICA. (GUILIELMA UTILIS OERST., S. P. I. NO. 54776.)

The date palm, on whose fruit with the addition of a few other foodstuffs thousands of Arabs subsist for a large portion of the year, finds a tropical American counterpart in the pejibaye, which since pre-Columbian days has yielded the principal food of the Indians inhabiting southern Costa Rica. Though its cultivation is now restricted to the region between Lake Nicaragua and Ecuador, it can undoubtedly be grown in many portions of the tropical world. (Photographed by Wilson Popenoe, San José, Costa Rica, June 17, 1920; P17936FS.)

A BUNCH OF SEEDLESS PEJIBAYES. (GUILIELMA UTILIS OERST., S. P. I. No. 54776.)

Though it has been likened to the date palm because of its ability to produce large quantities of nourishing food, the pejibaye differs from the date in that its chestnut-flavored fruits contain starch instead of sugar. Don Josá Zeledon, of San José, Costa Rica, to whom the Department of Agriculture is indebted for the gift of plants of the seedless pejibaye, a rare and superior variety, is here shown holding a bunch that weighs about 25 pounds. A mature palm frequently bears five or six bunches in a single crop. (Photographed by Wilson Popenoe, San Jose, Costa Rica, June 17, 1920; P17941FS.)

54786 and 54787—Continued.

54786. *Raby Castle.*

For previous introduction, see S. P. I. No. 54773.

54787. *Little Croft Beauty.*

54788 to 54790. JUGLANS REGIA L. Juglandaceæ. Walnut.

From Eskdale, Knutsford, Cheshire, England. Seeds presented by Howard Spence. Received January 20, 1922.

"Walnuts from the lower Himalayas, Northwest Provinces, India, which appear to be similar to those which gave very vigorous, unusually well-rooted plants. If they are of the original type they will be of especial vigor, much more easily transplanted without injury than is the ordinary type, and therefore of value as a stock.

"In this country the growth of these walnuts is much more rapid than either the ordinary *Juglans regia* or *J. nigra;* they appear to suffer much less from leaf attack of various kinds, withstand frost much better than the ordinary *J. regia* or *Royal* or *Paradox*, and have a dense mass of fibrous rootlets with marked absence of excessive taproot. The thick shell safeguards their viability. I have kept some a year unstratified, simply in a drawer, and obtained germination." (*Spence.*)

54788. No. 1.

54789. No. 5.

54790. No. 8.

54791 to 54795.

From Luxey, Landes, France. Seeds presented by L. Rouest, agronomist, Experimental Farm. Received January 17, 1922. Quoted notes by M. Rouest.

54791. DOLICHOS LABLAB L. Fabaceæ. Bonavist bean.

"A Dolichos with violet flowers and black seeds, which is interesting for its resistance to drought; it produces excellent ensilage. This plant, of Egyptian origin, is of the second generation cultivated in France."

54792. LATHYRUS SATIVUS L. Fabaceæ. Bitter vetch.

"*Tangier* vetch, a legume resistant to drought, with a growing period of about 80 days. The forage is much valued for sheep, and the seeds are eaten by the Arabs of Tangier and northern Africa and by the Sicilians."

For previous introduction, see S. P. I. No. 45927.

54793. RAPHANUS SATIVUS L. Brassicaceæ. Radish.

"*Daikon* (Chinese forage crop) useful either for ensilage or as a root crop. Here we sow the seed in July and August. The roots weigh several kilos and can be kept well in winter. They make a good food for milch cows."

54794 and 54795. SOJA MAX (L.) Piper. Fabaceæ. (*Glycine hispida* Maxim.) Soy bean.

54794. "*Very early Japanese.* A variety growing even farther north than Paris, very productive, and maturing in 90 to 100 days."

54795. "*Very early brown.* A variety growing in Pas de Calais and in eastern France."

54796 and 54797. SORBUS TORMINALIS (L.) Crantz. Malaceæ.

From Elstree, Herts, England. Seeds and plants presented by Hon. Vicary Gibbs. Received January 23, 1922.

This handsome European tree, 30 to 40 (rarely 70 or more) feet in height, is apparently seldom found as a wild tree and is very rare in cultivation. It is said to be very drought resistant; this introduction was made for the purpose of testing its use as an apple and pear stock for dry regions.

For previous introduction, see S. P. I. No. 49432.

54796. Seeds.

54797. Plants.

54798. Bromelia pinguin L. Bromeliaceæ.

From Juan Mina, Canal Zone. Seed collected by Dr. David Fairchild, Agricultural Explorer in Charge of the Office of Foreign Seed and Plant Introduction, Bureau of Plant Industry. Received January 19, 1922.

"Seeds from fruits collected on the Jungle Trail, on the Chagres River, Juan Mina, Canal Zone. September 7, 1921. A wild species of Bromelia, 5 or more feet in height, producing very showy heads of deep-orange flowers the size of a globe artichoke. The individual fruits are easily detached from the head, and when crushed between the teeth provide a small quantity of pleasantly flavored juice." *(Fairchild.)*

For previous introduction, see S. P. I. No. 32382.

54799. Acacia verek Guill. and Perr. Mimosaceæ.

From Khartum, Anglo-Egyptian Sudan. Seeds presented by Maj. R. G. Archibald, Wellcome Tropical Research Laboratories, through Henry S. Wellcome. Received January 19, 1922.

"*Hashab* from Kordofan, which yields the finest qualities of gum arabic." (*Archibald.*)

For experimental growing in the southwestern United States.

For previous introduction, see S. P. I. No. 38524.

54800. Coffea amara Bruijning. Rubiaceæ. Coffee.

From Port Louis, Mauritius. Seeds presented by G. Regnard. Received January 13, 1922.

The name *Coffea amara* has been assigned to the *Mautsaka* variety, a caffeine-free coffee from Madagascar, to show that it has characters which distinguish it from other caffeine-free species of Coffea. It has a pleasant aroma but a bitter taste which may be dispelled by cultivation. The disk at the top of the fruit resembles that of *C. libirica* more closely than it does that of *C. arabica.* (Adapted from *Bruijning, Verslagen van Landbouwkundige Onderzoekingen der Rijkslandbouw Proefstations, Netherlands, vol. 18, p. 115.*)

Introduced for the use of specialists in the Department of Agriculture.

For previous introduction, see S. P. I. No. 43073.

54801 to 54804. Ribes vulgare Lam. Grossulariaceæ. Garden currant.

From Woking, Surrey, England. Plants purchased from George Jackson & Son. Received January 21, 1922.

Introduced for experimental work by specialists in the Department of Agriculture.

54801. *Raby Castle.*
54802. *Victoria.*
54803. *White Dutch.*
54804. *White Grape.*

54805. Camoensia maxima Welw. Fabaceæ.

From Cienfuegos, Cuba. Seeds presented by Robert M. Grey, Harvard Experiment Station. Received January 13, 1922.

A delicately beautiful tropical-African leguminous vine with fragrant gold-margined white flowers 8 inches long.

These seeds came from a plant sent Mr. Grey in 1908 under S. P. I. No. 7344.

For previous introduction and description, see S. P. I. No. 49280.

54806 to 54888. Soja max (L.) Piper. Fabaceæ. Soy bean.

(*Glycine hispida* Maxim.)

From Harbin, Manchuria. Seeds presented by B. W. Skvortzow. Received February 28, 1922.

Introduced for experimental work by department specialists.

54806. No. 90.
54807. No. 91.
54808. No. 95.
54809. No. 96.
54810. No. 98.
54811. No. 99.
54812. No. 101.
54813. No. 102.
54814. No. 106.
54815. No. 111.
54816. No. 114.
54817. No. 115.
54818. No. 118.
54819. No. 119.
54820. No. 120.
54821. No. 122.
54822. No. 123.
54823. No. 125.
54824. No. 124.
54825. No. 126.
54826. No. 127.
54827. No. 128.
54828. No. 129.
54829. No. 130.
54830. No. 132.
54831. No. 133.
54832. No. 134.
54833. No. 135.
54834. No. 136.
54835. No. 137.
54836. No. 141.
54837. No. 142.
54838. No. 143.
54839. No. 144.
54840. No. 145.
54841. No. 146.
54842. No. 148.
54843. No. 150.
54844. No. 151.
54845. No. 153.
54846. No. 154.
54847. No. 155.
54848. No. 156.
54849. No. 157.
54850. No. 159.
54851. No. 160.
54852. No. 164.
54853. No. 165.
54854. No. 168.
54855. No. 169.
54856. No. 172.
54857. No. 175.
54858. No. 176.
54859. No. 177.
54860. No. 178.
54861. No. 180.
54862. No. 181.
54863. No. 183.
54864. No. 185.
54865. No. 186.
54866. No. 187.
54867. No. 190.
54868. No. 191.
54869. No. 192.
54870. No. 193.
54871. No. 194.
54872. No. 195.
54873. No. 196.
54874. No. 198.
54875. No. 199.
54876. No. 200.
54877. No. 213.
54878. No. 214.
54879. No. 215.
54880. No. 216.
54881. No. 217.
54882. No. 219.
54883. No. 220.
54884. No. 224.
54885. No. 225.
54886. No. 227.
54887. No. 298.
54888. No. 421.

54889. Trifolium pratense L. Fabaceæ. Red clover.

From Groningen, Netherlands. Seeds purchased from C. Broekema. Received March 2, 1922.

Rozendaal red clover.

For previous introduction, see S. P. I. No. 49884.

Introduced for specialists of the Department of Agriculture.

54890 to 54895.

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, in charge, Department of Botany and Forestry, Experimental Station of the Hawaiian Sugar-Planters' Association. Received March 2, 1922. Quoted notes by Doctor Lyon.

54890. Elaeocarpus angustifolius Blume. Elæocarpaceæ.

"*Djanitri*, from Buitenzorg, Java."

A tall, handsome tree with a lofty crown, from the primeval evergreen forests of Java, where it is found from sea level to an altitude of approximately 4,000 feet. The narrow, partly evergreen leaves become brilliant orange-red before they drop, and the clusters of greenish, silky fringed flowers appear in December. In the late summer the tree bears beautiful blue fruits the size of marbles; the edible portions of these is thin but pleasant flavored and is eaten by the natives. The knobby, grooved stones are exported in large quantities for rosaries.

This tree is useful not only as an ornamental, but also in reforesting denuded mountain sides. (Adapted from *Koorders en Valeton, Mededeelingen uit 's Lands Plantentuin No. 11, p. 260.*)

For previous introduction, see S. P. I. No. 51817.

54891. Ficus ehretioides F. Muell. Moraceæ.

"Seeds of a tree 60 to 70 feet tall with fruits borne in clusters on the trunk and larger branches, collected in Queensland by C. E. Pemberton."

Magura. A medium-sized Australian tree, 40 to 60 feet in height, having somewhat heart-shaped, globular, edible fruits an inch in diameter. (Adapted from *Bailey, Queensland Flora, pt. 5, p. 1473.*)

54892. Ficus hispida L. f. Moraceæ.

"A hardy shrub, or small tree, collected in Queensland by C. E. Pemberton."

A moderate-sized, rapid-growing tree, native throughout India from the Punjab to Malakka and Ceylon. The somewhat pear-shaped, paired or clustered fruits are yellowish when ripe; they sometimes hang on elongated branches and often reach or even penetrate the soil. The fruit, seeds, and bark are valuable medicinally, and the foliage is used for fodder. (Adapted from *Kirtikar, Indian Medicinal Plants, vol. 2, p. 1196.*)

54893. Grewia stylocarpa Warb. Tiliaceæ.

"Collected in the Philippine Islands by F. X. Williams."

Muling. This Philippine tree, usually small but sometimes more than 50 feet high, bears terminal or axillary clusters of yellowish, pear-shaped, fleshy fruits of a subacid applelike flavor, said to be of excellent quality. It is not cultivated. (Adapted from *Philippine Agricultural Review, vol. 9, No. 3, p. 238.*)

54894. Sesban aegyptiacum Poir. Fabaceæ.

A stout shrubby plant 6 to 10 feet in height, native to tropical Asia and northern Australia. The yellow flowers, spotted with purple, are borne in axillary clusters about 4 inches long. In Australia the leaves are much relished by live stock, and the wood is used in making charcoal for gunpowder. (Adapted from *Rock, Leguminous Plants of Hawaii, p. 154.*)

54890 to 54895—Continued.

54895. SIDEROXYLON MACRANTHUM Merr. Sapotaceæ.

"Collected in the Philippine Islands by F. X. Williams."

A large Philippine tree with somewhat leathery, shining leaves up to 7 inches in length and small creamy white flowers which are crowded in clusters at the tips of the branches. The roundish fruits, slightly over an inch in diameter, are two to three seeded. (Adapted from *Merrill, New or Noteworthy Philippine Plants No. 4, Manila Bureau of Government Laboratories, No. 35, p. 56.*)

54896 to 54898. ERYTHRINA spp. Fabaceæ.

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, in charge, Department of Botany and Forestry, Experiment Station of the Hawaiian Sugar-Planters' Association. Received March 7, 1922.

"Seeds collected in Honolulu, February, 1922." (*Lyon.*)

54896. ERYTHRINA VARIEGATA Stickm.
(*E. indica* Lam.)

For description, see S. P. I. No. 54898.

54897. ERYTHRINA MONOSPERMA Gaud.

Wiliwili. A tree 6 to 10 meters (20 to 33 feet) in height, with a spreading crown of stiff, gnarled branches and terminal clusters of brick-red, orange, or pale-yellow flowers. The pods contain scarlet or dark-red seeds. The wood is soft and very light and was used by the Hawaiians for the float on the outrigger of their dugout canoes. The tree inhabits dry regions on all the Hawaiian Islands, though cattle have nearly exterminated it on Kauai, Molokai, and Oahu. (Adapted from *Rock, Leguminous Plants of Hawaii, p. 181.*)

54898. ERYTHRINA VARIEGATA Stickm.
(*E. indica* Lam.)

Indian coral tree, or *tiger's-claw.* A moderate-sized, quick-growing, deciduous tree, native throughout India from the foot of the Himalayas into Burma, but cultivated all over the Tropics. The clusters of large, bright-red flowers appear before the leaves. The pods, 4 to 8 inches long, contain several dark-carmine seeds. The flowers are dried for use as a dye; the bark is used for tanning and dyeing and yields an excellent, pale straw-colored fiber. The leaves are used as cattle fodder; the bark and leaves are also used medicinally. The open-grained, light wood is durable and does not split or warp; it is used for boxes, toys, trays, and also for firewood. Much of the lacquered ware of India is made of the wood of this tree. (Adapted from *Rock, Ornamental Trees of Hawaii, p. 119.*)

54899. ZINZIBER sp. Zinziberaceæ. Ginger.

From Canton, China. Seeds presented by F. A. McClure, instructor, Canton Christian College. Received February 20, 1922.

"*Ye Kaung.* A species of ginger with deep-yellow flowers borne on leafless stalks and black seeds in a red receptacle. Found at the edge of a thicket at Patkaleng." (*McClure.*)

54900 and 54901.

From Mayaguez, Porto Rico. Tubers presented by T. B. McClelland, horticulturist, Porto Rico Agricultural Experiment Station. Received March 16, 1922.

54900. DIOSCOREA ALATA L. Dioscoreaceæ. Greater yam.

Purple Ceylon. This yam, so called because of the purple color of its flesh, was imported in 1908 from Ceylon for the experiment station, and, on account of its pleasing flavor, has become a favorite variety. Any part of the tuber may be utilized for planting with the assurance that it will yield a profitable crop. At the experiment station half-pound seed pieces cut from the lower part of the root produced an average of nearly 5 pounds per plant. This is a splendid weight for a

54900 and 54901—Continued.

root of the *Purple Ceylon* variety and compares favorably with that produced by equal-sized pieces of the basal, or upper, part of the root.

The vines of this variety are long, large, vigorous, and four sided. The blade of the leaf is 6 by 4 or 5 inches, and it is dark green. A few small air tubers 2 by 1½ inches develop on the vines of this variety. The edible root is almost spherical or made up of two or three large round lobes. It never forms long, deep-growing roots. The starch content in the fresh root is about 20 per cent. After being cooked this yam has a smooth, even texture and retains its dark-purple color. Its flavor is rich and pleasing and has been highly complimented by all who have tested it. (Adapted from *C. F. Kinman* in *Bulletin 27, Porto Rico Agricultural Experiment Station, pp. 16 and 17.*)

For an illustration of tubers of the Purple Ceylon yam, see Plate III.

54901. DIOSCOREA CAYENENSIS Lam. Dioscoreaceæ. **Yellow Guinea yam.**

Congo. In Mayaguez this is called *Congo amarillo*, but in the San Juan market, where it is found in greater abundance than other kinds, it is known as *Yellow Guinea.* It thrives much better in sandy soil than most yams. The large roots attain a length of a foot, are rather cylindrical, and average a weight of 4 to 5 pounds in favorable seasons. The interior of the starchy root is a rich light yellow and turns dark brown when exposed to the air. It is smoother and more even grained than the water yams and not less so than the roots of the *White Guinea* or the *Potato* yams. It is rich yellow and of good texture when cooked. The flavor is pleasant and compares favorably in richness with the best yams. The vines of this variety are not angled; they are small and very strong and make a moderately vigorous growth. (Adapted from *C. F. Kinman* in *Bulletin 27, Porto Rico Agricultural Experiment Station, pp. 20 and 21.*)

"In addition to the data on quality given by Mr. Kinman, it may be noted that this yam has a slightly bitter taste; on this account special methods of cooking may sometimes be required. It is said that the bitterness is more noticeable in immature tubers than in fully mature ones." (*R. A. Young.*)

For an illustration of tubers of the Congo yam, see Plate IV.

54902. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Brisbane, Queensland, Australia. Cuttings presented by H. T. Easterby, general superintendent, Bureau of Sugar-Experiment Stations. Received March 7, 1922.

A few years ago a variety of sugar cane called *Shahjahanpur No. 10* was received by the Queensland Bureau of Sugar-Experiment Stations from the Shahjahanpur Sugar-Experiment Station, India, being recommended as a cane which would stand cold weather. This cane was planted out at the Bundaberg station, where it was found to resist severe frosts remarkably well. Its sugar content and cropping qualities being good, it was ultimately distributed to a considerable extent in southern Queensland. A very fine block of this variety, about 12 acres in extent, was grown at Spring Hill. This cane presented a splendid vigorous growth when only 9 months old. It had never been affected by frost. If this variety maintains its reputation, it should be extremely valuable to cane growers who live in regions where frost damage is common. The last analysis of the cane, made at the Bundaberg station last year, gave the following results:

Brix	21.7
Purity of juice	91.0
Percentage of fiber in cane	13.6
Commercial cane sugar	15.05

(Adapted from *The Australian Sugar Journal, vol. 13, p. 336.*)

54903. MALUS DOUMERI (Bois) Cheval. Malaceæ. **Tonkin apple.**

(*Pyrus doumeri* Bois.)

From Laos, French Indo China. Seeds presented by R. Miéville, director, Station Agricole du Tranninh, Chieng Kuang. Received March 11, 1922.

TUBERS OF THE PURPLE CEYLON YAM. (DIOSCOREA ALATA L., S. P. I. No. 54900.)

The Purple Ceylon yam, as shown by these characteristic tubers, is usually somewhat spherical, never elongated. The flesh is deep purple and retains the color when cooked, which makes a dish of this yam exceedingly attractive: the quality is excellent. The tubers shown are much reduced in size. This variety has become such a favorite for table use in Porto Rico that the increase in production has been hindered by the lack of sufficient propagating material. (Photographed by E. L. Crandall, Washington, D. C., March 20, 1922: P27534FS.)

TUBERS OF THE CONGO YAM. (DIOSCOREA CAYENENSIS LAM., S. P. I. No. 54901.)

The Congo yam, shown above greatly reduced in size, has rich yellow flesh strikingly different from all other yams commonly grown. While the flavor is not so delicate as that of many other yams, the texture is good and the color attractive. The average weight of tubers, when grown under favorable conditions, is 4 to 5 pounds. (Photographed by F. L. Crandall, Washington, D. C., March 20, 1922; P27535FS.)

"An interesting wild apple, native to the high plateaus of Indo China, at altitudes of 800 to 2,000 meters (2,620 to 6,562 feet), notably on Langbian and the lesser mountain ranges.

"It is a large tree which produces fruits similar in form, flavor, and color to certain varieties of Normandy cider pears.

"Although the species grows in the open forest and is uncared for by the present mountaineers, it must have been cultivated and improved at some ancient time. There remain specimens cultivated as sacred trees around certain Laos pagodas; here the trees were cared for by priests." (*Aug. Chevalier.*)

For previous introduction, see S. P. I. No. 53008.

54904. PASPALUM NOTATUM Fluegge. Poaceæ. **Grass.**

From San Jose, Costa Rica. Seeds presented by Sr. J. Alfredo Quiros. Received February 24, 1922.

A perennial grass, used for forage in tropical America, introduced for the use of department specialists.

54905. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Warsaw, Poland. Seeds purchased through L. J. Keena, American consul general. Received March 17, 1922.

"The only variety of red-clover seed which appears to be procurable in Poland." (*Keena.*)

Introduced for comparative tests with American-grown clover.

54906 to 54908. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. **Ma-yuen.**

From Manila, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Bureau of Agriculture. Received March 9, 1922.

"*Adlay.* When it is considered that adlay far surpasses rice in yield, that its analysis is quite similar to that of wheat, that it can be eaten like rice and also can be ground into flour and used in making biscuits and bread, that the grits make an excellent breakfast food, and that it can be grown from sea level to an altitude of more than 3,000 feet, it is fair to assume that it is only a question of time when adlay will be widely cultivated in the Tropics." (*Wester.*)

"Adlay has many qualities over other grains that ought to appeal to the dry-land rice farmers. First, this grain will stand a drought that would kill upland rice and still produce a good crop; second, adlay is a plant that locusts do not seem to bother; I have seen upland rice destroyed by locusts while the adlay planted around the field was not touched by them; third, adlay will produce nearly double the yield per hectare that can be expected from upland rice; fourth, the care and cultivation of 1 hectare of adlay can be carried on at less than one-half the cost of taking care of 1 hectare of upland rice.

"The food value of adlay has been known to the Filipino farmers a long time, and it has been used by them in various ways, roasted in cakes and as a substitute for rice. It also is a first-class feed for poultry." (*W. G. McCarty, supervising agricultural agent, Santa Cruz, Laguna.*)

For further description, see Philippine Agricultural Review, vol. 13, p. 217.

For previous introduction, see S. P. I. No. 54454.

54906. *Adlay No. 1.*

54907. *Adlay No. 2.*

54908. *Adlay No. 3.*

54909. TRITICUM AESTIVUM L. Poaceæ. **Common wheat.**
(*T. vulgare* Vill.)

From Nanking, China. Seeds presented by J. Lossing Buck, acting dean, College of Agriculture and Forestry, University of Nanking. Received March 11, 1922.

"One of our students from Shantung told us that because of floods in the autumn a large amount of wheat was planted in the spring. This is the first time I have heard of spring wheat in China. These seeds are from Tung Tsao, Koo-yung District, Shantung." (*Buck.*)

54910. Myrianthus arboreus Beauv. Moraceæ.

From Zomba, Nyasaland Protectorate. Seeds presented by E. W. Davy, Assistant Director of Agriculture. Received March 13, 1922.

A medium-sized ornamental tree with spreading branches, common in the dense humid forests of tropical Africa at an altitude of about 4,000 feet. The palmate leaves, with five to seven leaflets, are up to 20 inches in length. The male flowers, borne in axillary clusters with peduncles 2 to 7 inches long, form a solid mass of yellow, later becoming brownish gold. The edible golden yellow fruits are up to 4 inches in diameter, with an acidulous-sweet flavor, and in the Southwest Africa Protectorate are much esteemed by the natives who bring them to the coast markets. (Adapted from *Hiern, Catalogue of Welwitsch's African Plants, pt. 4, p. 995; Thiselton-Dyer, Flora of Tropical Africa, vol. 6, pt. 2, p. 231;* and *Wildeman, Mission Emile Laurent, vol. 1, p. 377.*)

For previous introduction, see S. P. I. No. 44250.

54911 to 54917.

From Christiania, Norway. Seeds presented by Haakon Foss, director, Agricultural Experiment Station. Received March 16, 1922. Quoted notes by Mr. Foss.

"Early varieties of barley and oats that have proved valuable in the central mountain districts of Norway. They should be of interest for regions of high altitude and cold climate in the United States.

"The seeds sent were grown chiefly in 1921 at Vindingstad, the experiment farm in the central mountain districts, lying at an elevation of 550 meters (approximately 1,800 feet)."

54911. Avena sativa L. Poaceæ. **Oats.**

"*Perle havre* (pearl oats). An early variety of oats with stiff stems, selected by Doctor Christie, Hamar, Norway. The yield is very high, the average for 1919 to 1921 being 3,300 kilograms of grain and 6,800 kilograms of straw per hectare, or approximately 92 bushels of grain and 2.7 tons of straw per acre. The grain is small, but thin husked and plump, and the plant may be grown at nearly the same altitude as barley."

54912 to 54917. Hordeum vulgare pallidum Seringe. Poaceæ. **Barley.**

54912. "*Opdal cyg.* A local variety of barley originated near Opdal in the central high-mountain region. It is very early ripening and of good yield under low temperature conditions and is used mostly on the border of the grain-growing area."

54913. "*Asplúnd cyg.* A famous new barley variety of the *hexastichum* type which was selected by a Swedish farmer at Asplúnd. It is not very early ripening nor very well adapted to low temperature conditions, but under medium conditions it is superior in yield and stem stiffness to all varieties hitherto tested."

54914. "*Bjöorneby cyg.* A widely cultivated variety of barley, originated in the eastern part of Norway. It is used mostly in the lower mountain valleys."

54915. "*Dönnes cyg.* An old local variety of barley originated near Dönnes in Nordland. It is very early ripening and of extremely high yield under low temperature conditions, but of only medium grain qualities."

54916. "*Maskin cyg.* Selected by Doctor Christie. An early-ripening variety with very stiff stems and of high yield. The average for 1920 and 1921 was 3,640 kilograms of grain and 4,260 kilograms of straw per hectare, or approximately 67.6 bushels of grain and 1.7 tons of straw per acre. The quality of the grain is superior."

54917. "*Trysil cyg.* A widely grown variety of barley, originated in the eastern part of Norway. It is used mostly in the lower mountain valleys."

54918 and 54919.

From Tripoli, Libia, Africa. Seeds presented by Dr. E. O. Fenzi. Received March 22, 1922. Quoted notes by Doctor Fenzi.

These are the wild forms of well-known evergreens and may differ from the varieties now cultivated. Both are native to Cyrenaica.

54918. CUPRESSUS SEMPERVIRENS L. Pinaceæ. **Cypress.**

"This is first found at about 650 feet elevation, but grows at its best above 1,300 feet, where trees 100 feet high and showing the same branching habit as the old cedars of Lebanon are not rare. They are confined to the northern slope of the Cyrenaican plateau, where precipitation is much greater than on the southern slope."

54919. JUNIPERUS PHOENICEA L. Pinaceæ. **Juniper.**

"The Juniperus is much more plentiful than the Cupressus, so much so as to constitute about 60 per cent of the whole woody vegetation between sea level and 2,600 feet elevation. It may become over 30 feet in height, but is generally smaller. The wood of both species is quite heavy and practically indestructible."

54920 to 54922.

From Mount Silinda, Southern Rhodesia, Africa. Seeds presented by Dr. W. L. Thompson. Received March 22, 1922. Quoted notes by Doctor Thompson.

54920. KHAYA NYASICA Stapf. Meliaceæ. **African mahogany.**

"The *red mahogany* is one of our most valuable timber trees and is widely distributed over Mozambique. It is fairly rapid in growth, though not equal to some of the eucalypts in this respect. It is found most often growing near streams, but also on high ground at a distance from water. The timber is very durable and is not attacked by white ants or borers."

A huge tree, 150 feet or more in height, with a very straight trunk and an enormous crown of handsome glossy foliage which is not eaten to any extent by locusts. The hard red timber has a beautiful grain and is easily worked. The seeds are boiled and crushed by the natives, who use the resulting oil in their hair to kill vermin. The tree is native to Gazaland, Mozambique, where its native name is *umbaba.* (Adapted from *Journal of the Linnean Society, vol. 40 (Botany), p. 42.*)

54921. STRYCHNOS MELLODORA S. Moore. Loganiaceæ.

"The Strychnos is also prized by us for its timber, which is fine grained and strong, and is used here for tool handles. It is not so large a tree as the *red mahogany,* not usually more than a foot or 15 inches in diameter. It is much more free from the attacks of insects than the *ukuhla* and not so completely immune as the *red mahogany.*"

54922. TRICHILIA CHIRINDENSIS Swynn. and Baker. Meliaceæ.

"The *ukuhla* is a fine timber tree except for the fact that white ants and borers attack the wood. I have some bookshelves made of this lumber over 20 years ago which have not been touched by borers since, though they have some borer holes in them, made previous to the lumber being made up into shelves. This immunity is due to chance treatment, lying out in the storms during our rainy season, not to controlled conditions. We have tried soaking the lumber in a pond, but so far have not learned to control conditions so as to be uniformly successful. The seeds are partially covered with a white pulp, inclosed by a bright-red skin, having a nutty flavor, and although there is very little of it on each seed the natives are very fond of it. An oil is also obtained from the seeds. I once obtained some of it from a native; it was quite solid like tallow, and I attempted to make candles of it, but when melted it did not harden again at once on cooling."

54920 to 54922—Continued.

One of the finest forest trees of Gazaland, Mozambique. It has a spreading head of dark glossy leaves, light-gray bark, and dull-white flowers; it makes an excellent shade tree, sometimes becoming 120 feet in height. The timber is reddish brown and easily worked. (Adapted from *Journal of the Linnean Society, vol. 40 (Botany), p. 39.*)

54923 to 54927.

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, in charge, Department of Botany and Forestry, Experiment Station of the Hawaiian Sugar-Planters' Association. Received March 20, 1922. Quoted notes by Doctor Lyon.

These trees were introduced at the suggestion of J. F. Rock, Agricultural Explorer of the United States Department of Agriculture, for trial as ornamentals for southern Florida.

54923. CASSIA NODOSA Buch.-Ham. Cæsalpiniaceæ.

"Seeds collected in Honolulu, February, 1922."

Pink and white shower. This magnificent flowering tree is one of the most commonly cultivated ornamental plants in Honolulu, where it is much used for street planting. It is a moderate-sized, deciduous tree with long drooping branches and glossy leaves; during May and June it bears a profusion of beautiful, bright-pink, rose-scented flowers in dense clusters on long stalks. It is native to India from the eastern Himalayas to the Malay Archipelago, and also to the Philippines. (Adapted from *Rock, Ornamental Trees of Hawaii, p. 106.*)

54924. CASSIA SIAMEA Lam. Cæsalpiniaceæ. **Kassod tree.**

The kassod tree is of rather low stature, with twiggy branches and bluish leaves up to a foot in length. In the late summer and early autumn, when all of the other showy leguminous trees have ceased to bloom, this tree bears axillary and terminal panicles of attractive bright-yellow flowers. In Honolulu it has been planted more or less extensively in private grounds. The native home of the kassod tree is southern India and Malaysia. (Adapted from *Rock, Ornamental Trees of Hawaii, p. 99.*)

54925. LEPISANTHES ERIOLEPIS Radlk. Sapindaceæ.

"Seeds collected in the Philippines by F. X. Williams."

An East Indian tree with pinnate leaves composed of about four pairs of oblong leaflets and small whitish flowers borne in dense panicles. (Adapted from *Actes du Congrès International de Botanistes, 1877, p. 106.*)

54926. POLYSCIAS NODOSA (Blume) Seem. Araliaceæ.

"Seeds collected in the Philippines by F. X. Williams."

The *malapapaya* is a lofty tree found in nearly every Province of the Philippine Islands. It sometimes reaches a height of 100 feet, with a straight trunk and compound leaves over 3 feet in length. The yellowish white, light, very soft wood is considered one of the best match woods, and also is valuable for very light construction purposes. (Adapted from *Whitford, Forests of the Philippines, pt. 2 p. 89.*)

54927. STERCULIA sp. Sterculiaceæ.

"Seeds collected in the Philippines by F. X. Williams."

54928. AGATI GRANDIFLORA (L.) Desv. Fabaceæ.

(*Sesbania grandiflora* Poir.)

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, in charge, Department of Botany and Forestry, Experiment Station of the Hawaiian Sugar-Planters' Association. Received March 2, 1922.

A small, rapid-growing, soft-wooded tree, 15 to 20 feet in height, with narrow, pinnate leaves, large pendulous white flowers, and long, sickle-shaped pods.

The fleshy petals are used in curries and soups in the Indian Archipelago, where this tree is native. The leaves and young shoots are sometimes used as fodder. In this country, the far South is the only region suited to this ornamental tree.

For previous introduction, see S. P. I. No. 54468.

54929 to 54958. FRAGARIA spp. Rosaceæ. **Strawberry.**

From Bourg la Reine, France. Plants purchased from Millet & Fils. Received March 28, 1922. Quoted notes from catalogue of Millet & Fils, unless otherwise stated.

"American strawberry breeders are interested in securing from all parts of the world wild species of Fragaria, as well as hybrids and horticultural varieties. The present collection has been introduced at the recommendation of George M. Darrow, of this department, with a view principally to furnishing material for use in the strawberry-breeding work now being conducted by the Department of Agriculture.

"In the development of European strawberries, at least four species have taken part. Prior to 1714, when the large-fruited *Fragaria chiloensis* was introduced into France from Chile, European horticulturists had to content themselves with the small-fruited native strawberries, *F. vesca* (wood strawberry) and *F. elatior* or *F. moschata* (the hautbois), to which was added, shortly after 1600, the American species, *F. virginiana*. These three were intercrossed and gave rise to numerous horticultural forms, which were in turn crossed with the Chilean species. The specific ancestry of many of the cultivated forms is now somewhat obscure and they are here listed as *Fragaria* spp." (*Wilson Popenoe.*)

The following everbearing varieties:

54929 to 54944. FRAGARIA spp. **Hybrid strawberry.**

54929. FRAGARIA sp.

"*Cyrano de Bergerac.* Derived from *St. Joseph.*"

54930. FRAGARIA sp.

"*Jeanne d'Arc.* Resembling *St. Joseph*, but more vigorous and with larger fruits." (*Robinson, Vegetable Garden, p. 702.*)

54931. FRAGARIA sp.

"*La Constante.* This is a synonym of *St. Joseph.*"

54932. FRAGARIA sp.

"*La Perle.* A variety of the highest merit with large pink fruits."

54933. FRAGARIA sp.

"*La Productive.* A cross between *St. Joseph* and *Edward Lefort*; plants vigorous, tall; fruits large, oblong, bright red, with very juicy and very sweet pink flesh. It is an everbearing variety, flowering very early in the spring." (*Robinson, Vegetable Garden, p. 703.*)

54934. FRAGARIA sp.

"*Louis Rossignol.* An improved form of *St. Joseph.*"

54935. FRAGARIA sp.

"*Odette.* An everbearing variety with long fruits of very good quality."

54936. FRAGARIA sp.

"*St. Antoine de Padoue.* A much more vigorous variety than *St. Joseph*, the result of a cross between that variety and *Royal Sovereign.* The large, conical fruits with very sweet, juicy flesh are borne until the end of July, then again in September and October." (*Robinson, Vegetable Garden, p. 703.*)

For previous introduction, see S. P. I. No. 41978.

54929 to 54958—Continued.

54937. FRAGARIA sp.

"*St. Joseph.* A bushy, rather dwarf, trailing plant which bears abundantly through the whole summer up to the first frosts. The medium-sized, heart-shaped fruits have rosy white, juicy, fragrant flesh." (*Robinson, Vegetable Garden, p. 701.*)

The following standard varieties:

54938. FRAGARIA sp.

"*Dr. Hogg.* Very much like the *British Queen* in habit, but with larger, fine scarlet fruits with very solid pinkish juicy flesh having a delicate fragrance." (*Robinson, Vegetable Garden, p. 697.*)

54939. FRAGARIA sp.

"*Docteur Morère.* A very vigorous variety with very large, broad fruits which are deep red when ripe, with pink, sugary flesh resembling that of the Chilean strawberry in flavor." (*Robinson, Vegetable Garden, p. 683.*)

54940. FRAGARIA sp.

"*Espoir.* A vigorous variety with very large dark-red fruits of fine quality."

54941. FRAGARIA sp.

"*Hericart* (*Vtesse H. de Thury*). A medium-sized fruit, of a brilliant-red color and fine quality."

54942. FRAGARIA sp.

"*Louis Gauthier.* A tall, robust plant bearing an abundance of large round pinkish fruits having juicy, fragrant flesh of very good quality." (*Robinson, Vegetable Garden, p. 687.*)

54943. FRAGARIA sp.

"*Madame Meslé.* A vigorous plant, a cross between *General Chanzy* and *Docteur Morère*, which bears an abundance of very large, oblong, tapering fruits of a beautiful vermilion red. The flesh is pink and of a delicate flavor." (*Robinson, Vegetable Garden, p. 689.*)

54944. FRAGARIA sp.

"*White Pineapple.* White fruits with excellent, very abundant, white flesh."

54945 and 54946. FRAGARIA MOSCHATA Duchesne. **Hautbois strawberry.**

54945. "*Belle Bordelaise.* A thickset compact plant with rather long, often conical, fruits which ripen about the middle of June." (*Robinson, Vegetable Garden, p. 677.*)

54946. "*Marguerite Lebreton.* Very early; bears an abundance of long fruits; the best variety for forcing."

54947 to 54958. FRAGARIA VESCA L. **Wood strawberry.**

54947. "*Belle de Meaux.* Dark-red fruits, somewhat elongated, with red flesh of excellent quality."

54948. "*Belle de Paris.* An everbearing variety with mottled leaves and very large, spherical (sometimes flattened) fruits. One of the best."

54949. "*Belle de Peraudiere.* Blunt red fruits with fragrant flesh."

54950. "*Belle du Mont Cenis.* Large, white, very good fruits."

54951. "*Belle du Mont Dore.* A somewhat elongated fruit with firm yellow flesh."

54952. "*Bush white.* An alpine bushy variety with white fruits." (*Robinson, Vegetable Garden, p. 675.*)

54929 to 54958—Continued.

54953. "*Gaillon de Semis.* One of the more vigorous of the everbearing varieties; for use on poor or wornout soils. Excellent as a border."

54954. "*Janus.* A very fine alpine variety, very productive, with large, conical fruits which are almost black when ripe. It comes true from seed." (*Robinson, Vegetable Garden, p. 675.*)

54955. "*Madame Beraud.* A blunt variety with obtuse red fruits of very good quality."

54956. "*Marie de Volder.* Elongated fruits of excellent quality."

54957. "*Millet.* A rather early robust variety with bright-red conical and flattened fruits with exquisite sugary flesh."

54958. "*President Meuren.* A variety with very fine, highly colored, somewhat elongated fruits."

54959 to 54962. Capsicum annuum L. Solanaceæ. Red pepper.

From Granada, Spain. Seeds purchased by Miss Ola Powell from Sr. Juan Leyva, Granada, Spain, through Gaston Smith, American consul. Received March 30, 1922. Quoted notes by Miss Powell.

"These peppers were much larger than any pimientos I have seen growing in the United States. The flesh was very thick and crisp and of delicious flavor. I ate them as one would eat apples."

54959. "*Cornicabra de Murcia.* This is the one which is most extensively grown in Murcia and used for making ground sweet pepper. I ate many of them while in Spain. Although I was told it was too early in the season to get this year's finished product, it seemed to me that the flavor and color had been remarkably retained."

54960. "*De cuatro cascas.* The largest pimiento I found; it is claimed to be the earliest ripening pepper. There did not appear to be very many fruits to each plant. If this variety can be made to ripen early in the United States I am sure it will prove a good one for use among Home-Demonstration Club members."

54961. "*Dulce de España.* A thick-fleshed variety of delicious flavor; the plants were no larger than those of *De cuatro cascas*, but they seemed to bear more fruit. It is rather longer than the others and is the sweet pepper used for canning in Spain."

54962. "*Morrón granadino* (heart-shaped). A rather choice improved variety."

54963. Barringtonia asiatica (L.) Kurz. Lecythidaceæ.

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, in charge, Department of Botany and Forestry, Experiment Station of the Hawaiian Sugar-Planters' Association. Received March 17, 1922.

A large, handsome, East Indian tree with thick, leathery, shining, bright-green leaves and very conspicuous flowers with four white petals and numerous crimson-tipped stamens, resembling a brush. The fruit is quite large and is the shape of a 4-sided pyramid; it is smooth on the outside and contains one seed. The tree forms extensive beach forests on some of the Pacific islands. In the Molukkas an illuminating oil is extracted from the seeds, and the dry fruits are gathered by the natives and used as floats for their fish nets. (Adapted from *Rock, Ornamental Trees of Hawaii, p. 663.*)

"Mr. Rock believes that this tree should be planted on the sandy beaches and keys of Florida." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 36867.

54964 to 54966. CERATONIA SILIQUA L. Cæsalpiniaceæ. **Carob.**

From Malaga, Spain. Budwood presented by Sr. Luis Liro Ortiz, through Gaston Smith, American consul, Malaga, Spain. Received March 30, 1922. Quoted notes by Sr. Ortiz, unless otherwise stated.

"In recent years carob cultivation has received serious attention in California, and efforts have been made to secure the best varieties from the Mediterranean region for trial in that State. These three which have been sent in by Sr. Luis Liro Ortiz are recommended as some of the best which are grown in the region of Malaga." (*Wilson Popenoe.*)

"With the exception of the *Castellana*, the carob grows in all this region without any cultural attention, often having the appearance of a wild tree. The *Castellana* is the only sort propagated by grafting. It is considered to be the most productive of all."

54964. "*Bravie.* Cuttings from a 35-year-old tree growing on the property of Basilia Mira Gutierrez, at Pago del Pino, District of Torrox. The tree receives no care whatever and is growing in dry, stony soil; in spite of these conditions, it produces long pods, somewhat more slender than those of *Castellana.*'

54965. "*Castellana.* Cuttings from a tree growing on the property of the widow of Salvador Mira Rico, at Pago del Pino, in the District of Torrox, Province of Malaga. The rootstock is of the *Bravie* variety and was top-worked to *Castellana* seven years ago. At present it yields excellent crops of long carobs, in spite of the fact that it is never pruned nor cultivated and that it is growing on stony land."

"The pods of this variety are about 8 inches long, plump, and very sweet. It appears to be an excellent sort." (*Wilson Popenoe.*)

54966. "*Macho.* Cuttings from a tree 30 to 35 years old, growing on the property of Salvador Molina Sanchez, at Pago del Pino, District of Torrox. The tree has been abandoned and stands on dry, rocky ground; in spite of this, it produces a large quantity of short, broad carobs."

54967. DIOSCOREA TRIFIDA L. f. Dioscoreaceæ. **Yampi.**

From Panama, Canal Zone. Collected by Dr. David Fairchild, Agricultural Explorer in Charge of the Office of Foreign Seed and Plant Introduction, Bureau of Plant Industry. Received October 3, 1921. Numbered March, 1922.

"This is a purple-skinned variety of the yampi. The yampi is not a strong grower, but since some of the most delicious of all the tropical yams belong to this species it will be well worth while if some of the varieties can be grown successfully in Florida. The leaves of this variety are five-lobed and the stem two to four winged, with purple lines on the wings." (*R. A. Young.*)

54968. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

From Harbin, Manchuria. Seeds presented by B. W. Skvortzow. Received February 28, 1922.

Introduced for experimental work by specialists of the Department of Agriculture.

INDEX OF COMMON AND SCIENTIFIC NAMES.

Abutilon theophrasti, 54748.
avicennae. See *A. theophrasti*.
Acacia verek, 54799.
Afzelia rhomboidea. See *Pahudia rhomboidea*.
Agati grandiflora, 54928.
Aleurites fordii, 54738.
montana, 54703.
Alfalfa, *Medicago sativa:*
Alps, 54729.
Poitou, 54730.
Provence, 54731.
Amaranthus caudatus, 54732.
gangeticus melancholicus, 54733.
Ampelocissus imperialis, 54727.
Andropogon rufus. See *Cymbopogon rufus*.
Annona sp., 54682.
Apple, Tonkin, *Malus doumeri*, 54903.
Apricot, Japanese, *Prunus mume:*
Beni Kaga, 54709.
Sashi, 54710.
Bungo, 54711.
Hanakami, 54712.
Inkyo, 54713.
Joshu, 54714.
Kichirobei, 54715
Ko mume, 54716.
Koshu, 54717.
Masui, 54718.
Rinshu, 54719.
Shidare, 54720, 54721.
Shira Kaga, 54722.
Tama mume, 54723.
Unnamed, 54780.
Unryu, 54724.
Yoro, 54725.
Avena sativa, 54911.

Bactris utilis. See *Guilielma utilis*.
Barley. See *Hordeum* spp.
Barringtonia asiatica, 54963.
Bean, bonavist, *Dolichos lablab*, 54791.
soy, *Soja max*, 54794, 54795, 54806–54888, 54968.
Belvedere, *Kochia scoparia*, 54734.
Berry, Colombian, *Rubus macrocarpus*, 54701.
Bromelia pinguin, 54798.
Bucklandia populnea, 54692.
Bupleurum fruticosum, 54693.

Camoensia maxima, 54805.
Capsicum annuum, 54778, 54959–54962.
Carob, *Ceratonia siliqua:*
Bravie, 54964.
Castellana, 54965.
Macho, 54966.
Cassia grandis, 54706.
nodosa, 54923.
siamea, 54924.
Casuarina sumatrana, 54705.
Ceratonia siliqua, 54964–54966.
Cherry, bush, *Prunus tomentosa*, 54757.
flowering, *Prunus serrulata*, 54781.
Chilacayote, *Cucurbita ficifolia*, 54700.
Chirimoriñon, *Annona* sp., 54682.
Citrus sinensis, 54699.
Clover, red, *Trifolium pratense*, 54707, 54708, 54728, 54739, 54779, 54889, 54905.
Coffea amara, 54800.
arabica, 54683.
liberica, 54684.
Coffee. See *Coffea* spp.
Coix lacryma-jobi ma-yuen, 54906–54908.
Cotton. See *Gossypium* spp.
Cowpea, *Vigna sinensis*, 54760.
Cucurbita ficifolia, 54700.
Cupressus sempervirens, 54918.
Currant, garden, *Ribes vulgare:*
Comet, 54770.
Little Croft Beauty, 54787.
New Red Dutch, 54771.
Perfection, 54772.
Raby Castle, 54773, 54786, 54801.
Red Dutch, 54774.
Red Grape, 54775.
Victoria, 54802.
White Dutch, 54803.
White Grape, 54804.
Cymbopogon rufus, 54679.
Cypress, *Cupressus sempervirens*, 54918.

Danthonia setacea, 54736.
Davidsonia pruriens, 54785.
Dioscorea alata, 54900.
cayenensis, 54901.
trifida, 54686, 54967.
Diospyros kaki, 54681, 54741.
Dolichos lablab, 54791.

Echinochloa colonum, 54678.
crusgalli edulis, 54749, 54750.
Elaeocarpus angustifolius, 54890.
Erythrina indica. See *E. variegata*.
monosperma, 54897.
variegata, 54896, 54898.

Eugeissona triste, 54768.
Eugenia brasiliensis. See *E. dombeyi*.
dombeyi, 54777.
klotzschiana, 54702.

Ficus ehretioides, 54891.
hispida, 54892.
Fig, Indian, *Opuntia ficus-indica*, 54689.
Flacourtia euphlebia, 54691.
Fragaria spp., 54929–54944.
moschata, 54945, 54946.
vesca, 54947–54958.

Galphimia brasiliensis. See *Thryallis brasiliensis*.
Ginger, *Zinziber* sp., 54899.
Glycine hispida. See *Soja max*.
Gossypium barbadense, 54688.
nanking, 54685.
Grape, Amur, *Vitis amurensis*, 54758, 54759.
Grass, *Echinochloa* spp, 54678, 54749, 54750.
jaragua, *Cymbopogon rufus*, 54679.
kangaroo, *Themeda australis*, 54737.
molasses, *Melinis minutiflora*, 54680.
Paspalum notatum, 54904.
wallaby, *Danthonia setacea*, 54736.
Grewia stylocarpa, 54893.
Grumichama, *Eugenia dombeyi*, 54777.
Guilielma utilis, 54776.

Hordeum vulgare coeleste, 54742.
vulgare pallidum, 54912–54917.
Hydnocarpus anthelminthica, 54726.

Joseph's-coat, *Amaranthus gangeticus melancholicus*, 54733.
Juglans regia, 54788–54790.
Juniper, *Juniperus phoenicea*, 54919.
Juniperus phoenicea, 54919.

Kaki, *Diospyros kaki*, 54681, 54741.
Kassod tree, *Cassia siamea*, 54924.
Khaya nyasica, 54920.
Kochia scoparia, 54734.

Lanagon, *Flacourtia euphlebia*, 54691.
Lathyrus sativus, 54792.
Lepisanthes eriolepis, 54925.
Love-lies-bleeding, *Amaranthus caudatus*, 54732.

Mahogany, African, *Khaya nyasica*, 54920.
Maikrabao, *Hydnoearpus anthelminthica*, 54726.
Majanji, *Uapaca kirkiana*, 54769.
Malapapaya, *Polyscias nodosa*, 54926.
Malus doumeri, 54903.
Mangifera indica, 54690.
Mango, Victoria, *Mangifera indica*, 54690.
Ma-yuen, *Coix lacryma-jobi ma-yuen*, 54906–54908.
Medicago falcata, 54751.
sativa, 54729–54731.
Melinis minutiflora, 54680.
Mesua ferrea, 54687.
Millet, barnyard, *Echinochloa crusgalli edulis*, 54749, 54750.
Mu-oil tree, *Aleurites montana*, 54703.
Myrianthus arboreus, 54910.

Oats, *Avena sativa*, 54911.
Olea sp., 54782.
Olive, wild, *Olea* sp., 54782.
Olombé, *Solanum pierreanum*, 54695.
Opuntia ficus-indica, 54689.
Orange, *Citrus sinensis*, 54699.
Oryza sativa, 54743, 54744.

Pahudia rhomboidea, 54784.
Palm, *Eugeissona triste*, 54768.
Phoenix ouseleyana, 54767.
Panicum miliaceum, 54752–54755, 54762–54766.
Paspalum notatum, 54904.
Pejibaye, *Guilielma utilis*, 54776.
Pepper, red, *Capsicum annuum:*
Cornicabra de Murcia, 54959.
Datil, 54778.
De cuatro cascas, 54960.
Dulce de España, 54961.
Morrón granadino, 54962.
Pera do campo, *Eugenia klotzschiana*, 54702.
Phoenix ouseleyana, 54767.
Pistacia lentiscus, 54694.
Plum, Japanese, *Prunus salicina*, 54756.
Polyscias nodosa, 54926.
Proso, *Panicum miliaceum*, 54752–54755, 54762–54766.
Prunus mume, 54709–54725, 54780.
salicina, 54756.
serrulata, 54781.
tomentosa, 54757.
Psidium sp., 54783.
Pyrus doumeri. See *Malus doumeri*.

Radish, Daikon, *Raphanus sativus*, 54793.
Raphanus sativus, 54793.
Ribes vulgare, 54770–54775, 54786, 54787, 54801–54804.
Rice, *Oryza sativa*, 54743, 54744.
wild, *Zizania latifolia*, 54761.
Rosa gentiliana, 54735, 54740.
Rose, *Rosa gentiliana*, 54735, 54740.
Rubus macrocarpus, 54701.

Saccharum officinarum, 54902.
Sesban aegyptiacum, 54894.
Sesbania grandiflora. See *Agati grandiflora*.
Sideroxylon macranthum, 54895.
Soja max, 54794, 54795, 54806–54888, 54968.

Solanum pierreanum, 54695.
Soliya heterophylla, 54696.
Sorbus torminalis, 54796, 54797.
Sterculia sp., 54927.
Stevia rebaudiana, 54677.
Strawberry:
hautbois, *Fragaria moschata:*
Belle Bordelaise, 54945.
Marguerite Lebreton, 54946.
hybrid, *Fragaria* spp.:
Cyrano de Bergerac, 54929.
Dr. Hogg, 54938.
Docteur Morère, 54939.
Espoir, 54940.
Hericart, 54941.
Jeanne d'Arc, 54930.
La Constante, 54931.
La Perle, 54932.
La Productive, 54933.
Louis Gauthier, 54942.
Louis Rossignol, 54934.
Madame Meslé, 54943.
Odette, 54935.
St. Antoine de Padoue, 54936.
St. Joseph, 54937.
White Pineapple, 54944.
wood, *Fragaria vesca:*
Belle de Meaux, 54947.
de Paris, 54948.
de Peraudiere, 54949.
du Mont Cenis, 54950.
du Mont Dore, 54951.
Bush white, 54952.
Gaillon de Semis, 54953.
Janus, 54954.
Madame Beraud, 54955.
Marie de Volder, 54956.
Millet, 54957.
President Meuren, 54958.
Strychnos mellodora, 54921.
Sugar cane, *Saccharum officinarum*, 54902.

Themeda australis, 54737.
Thryallis brasiliensis, 54697.
Trichilia chirindensis, 54922.
Trifolium pratense, 54707, 54708, 54728, 54739, 54779, 54889, 54905.
Triticum aestivum, 54745–54747, 54909.
vulgare. See *T. aestivum*.
Tung-oil tree, *Aleurites fordii*, 54738.

Uapaca kirkiana, 54769.
Ukuhla, *Trichilia chirindensis*, 54922.

Vetch, bitter, *Lathyrus sativus*, 54792.
Vigna sinensis, 54760.
Vitis amurensis, 54758, 54759.
imperialis. See *Ampelocissus imperialis*.
Voandzeia subterranea, 54704.

Walnut, *Juglans regia*, 54788–54790.
Wheat, common, *Triticum aestivum*, 54745–54747, 54909.

Yam, greater, *Dioscorea alata*, 54900.
Yellow Guinea, *Dioscorea cayenensis*, 54901.
Yampi, *Dioscorea trifida*, 54686, 54967.

Zanthoxylum alatum planispinum, 54698.
Zinziber sp., 54899.
Zizania latifolia, 54761.

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
5 CENTS PER COPY

PURCHASER AGREES NOT TO RESELL OR DISTRIBUTE THIS COPY FOR PROFIT.—PUB. RES. 57, APPROVED MAY 11, 1922

▽

Issued December, 1923.

U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY.

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1922.

(No. 71; Nos. 54969 to 55568.)

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1923.

ADDITIONAL COPIES

OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
10 CENTS PER COPY

PURCHASER AGREES NOT TO RESELL OR DISTRIBUTE THIS COPY FOR PROFIT.—PUB. RES. 57, APPROVED MAY 11, 1922

CONTENTS.

	Page.
Introductory statement	1
Inventory	7
Index of common and scientific names	59

ILLUSTRATIONS.

		Page.
PLATE I.	One of the white sapotes of Central America. (*Casimiroa tetrameria* Millsp.; S. P. I. No. 55445)	44
II.	A rare species of white sapote. (*Casimiroa tetrameria* Millsp.; S. P. I. No. 55445)	44
III.	The barajillo, a new leguminous shrub from Salvador. (*Meibomia rensoni* Painter; S. P. I. No. 55446)	44
IV.	Young branches of the barajillo. (*Meibomia rensoni* Painter; S. P. I. No. 55446)	44
V.	A jujube for moist tropical regions. (*Ziziphus mauritiana* Lam.; S. P. I. No. 55485)	50
VI.	Barbados Red, a good variety of tropical yam. (*Dioscorea alata* L.; S. P. I. No. 55561)	50

INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1922 (NO. 71; NOS. 54969 TO 55568).

INTRODUCTORY STATEMENT.

The migrations of cultivated plants are slow when compared with the spread of ideas or inventions, but it would surprise anyone who has not paid much attention to the subject to learn of the steady flow of new varieties which is going on from the old to the new countries. This inventory represents the stream which is reaching America through the carefully supervised Government channel.

As we look over the immigrants which have arrived during the last three months we are struck with the fact that most of those which are coming in will require a long period of acclimatization, and many of them will need to be bred with those varieties which we already have before they will prove their full value to the country. Just as the human immigrants who arrive at Ellis Island are amalgamating slowly but surely with those who came years ago, so these plant immigrants, many of them at least, will be known by the particular characters which they have contributed to the cultivated plants already here to which they are related; for, like all other living things, the cultivated plants on which we subsist are continually changing under the hands of the plant breeders and through the unconscious process of selection which is always going on.

The fact that these plants which are introduced need to be selected and bred simply emphasizes the lamentable circumstance that there are too few plant breeders in America and too little encouragement is given to those few to carry on this painstaking long-time work of breeding and selecting plants.

The general public has scarcely begun to realize the self-sacrifice and lifelong devotion to its study which the successful plant breeder must give to any plant before he brings about any permanent improvement in it or the ease with which years of effort may be wiped out in a single season of unfortunate occurrences. Neither has the public appreciated that the emoluments which come to the plant breeder are rarely sufficient to cover even the expenses of cultivation and the care which the plants have required, so that at the end of a life of devotion to this work the breeder often finds himself impoverished by the expenses of the upkeep of his collections. It is this condition more than any other which is retarding the development of our cultivated plants to-day, and it is a condition which should be remedied.

This inventory describes under Nos. 55031 to 55039 nine newly originated varieties of Finnish oats sent in from Helsingfors, some of which are reported to be improvements over the Guldregn variety, which is a standard in Finland, and others which are said to be particularly suited for cultivation on swampy land.

Sixty varieties of sorghum have been collected for Mr. Vinall, the sorghum specialist of the department, by the director of agriculture of the Sudan Government from all over the Anglo-Egyptian Sudan in the region tributary to Khartum (Nos. 55106 to 55165).

For the strawberry breeders the Irapuato variety (No. 54976) from the famous strawberry region of that name in Mexico will be of interest.

The search for varieties of corn which may furnish new characters to be incorporated into our American varieties has been extended to eastern Asia, and through our agricultural explorer, Mr. Rock, we have received from the slopes of Doi Chang Mountain, in upper Siam, a variety (No. 55045) which from time immemorial has been grown by the Miaos, those jungle natives who have long inhabited the high mountains of Siam and who are corn-eating people, despite the fact that all around them the Siamese and Chinese subsist on a diet of rice.

For the pear breeders and those particularly interested in the discovery of a better stock than the one we have for the cultivated pear Mr. Rock has secured seeds of *Pyrus pashia* (No. 54998) from the region of Kengtung, Burma, which, according to the information he could obtain, is used by the natives there as a stock for the sand pear. He has also sent in two new forms (Nos. 55497 and 55550) which he found cultivated near Talifu, in the Province of Yunnan.

Whether the sugar cane (No. 55501) which Mr. Rock found in cultivation in the dry arid region of Yunnan at 6,000 feet elevation will prove a shorter season variety than those we now have, only a trial will disclose.

Mr. Rock's discovery and introduction of the new species of cherry, *Prunus majestica* (Nos. 55417, 55476, 55498, and 55500), from this same region of Yunnan, where, he reports, it makes a tree 30 feet high on the exposed dry ridges 6,000 feet above sea level and produces its juicy bitter-fleshed fruits in great abundance in February and March, may mean the origination of cherries for our Southern States or it may mean a new stock for the cultivated cherry of the North which is more drought resistant than the mazzard or the mahaleb.

Whether one or other of these discoveries which Mr. Rock has made will, after the lapse of years, repay him in a measure for the months of hard work and discomfort and isolation which he has been through in his difficult journey into Yunnan from Siam over trails which have never been traveled before by botanists, or whether it will be the loveliness of his new flowering Cassia (No. 55049), which he discovered near Szemao and which in March he found covered with a mass of deep-pink flowers, time alone will show.

From peach seeds introduced several years ago from Valencia, Spain, there have originated at the Chico Plant Introduction Garden two new and, Mr. Morrow believes, particularly promising varieties of peaches for canning purposes (Nos. 55563 and 55564).

As a result of Mr. Popenoe's exploring work in Ecuador there have come in the seeds of two rather unusual varieties of potato from an altitude of 11,000 feet in the Ecuadorian Andes, in Carchi Province (Nos. 55557 and 55558).

From the new Republic of Czechoslovakia a collection of apple varieties (Nos. 55212 to 55232) has been received through the kindness of Josef Mazanek, but whether or not any of them will prove better than our commercial sorts will have to be determined. They are some of the noted sorts of that region.

The introduction of *Microcitrus inodora* from the Bellenden Ker Range of mountains of northern Queensland is of particular interest, inasmuch as this species, according to Doctor Swingle, the citrus specialist of the Bureau of Plant Industry, is the only one of the whole genus which bears fruit in its wild state of sufficiently good quality to make it of promise for cultivation without any improvement. We are especially indebted to C. T. White for the Russell River lime (No. 55447), as it is called in Queensland.

The matasano of Honduras, *Casimiroa tetrameria* (No. 55445), while not so hardy as its relative the white sapote, *C. edulis*, bears much larger fruit, and since it has shown its ability to grow well and fruit in southern Florida its wide dissemination there is considered a matter of importance.

In the category of secondary fruits of value to the housewife for preserves and for stewing appears to be the Indian jujube (*Ziziphus mauritiana*, No. 55485), bushes of which have borne heavily at Miami, Fla. Since in India there are cultivated forms of this fruit, which might be called a kind of southern crab apple, that seem to be superior, it has seemed important to get them.

Doctor Shantz during his explorations in South Africa was so impressed by the possibilities of the narras (*Acanthosicyos horrida*, No. 55486), a species of cucurbit which the Hottentots almost live upon during certain months of the year, that a new importation of the seeds has been made. This cucurbit, which forms spiny thickets in the Kalahari Desert, bears melonlike fruits, the seeds and flesh of which are keenly relished by the natives. If it can be established in our own southwestern deserts it may prove a very valuable acquisition.

The gum arabic of commerce constitutes a specialized industry in Arabia and the east coast of Africa, and although it is doubtful whether labor conditions would make it possible to develop the culture of the gum-yielding species of Acacias in our own deserts, their introduction for the trial seems worth making. Through the kindness of Mr. Massey, Government botanist of the Anglo-Egyptian Sudan, and of the director of the Wellcome Tropical Research Laboratories in Khartum, a collection of the best species has been made (Nos. 55419 to 55423).

The successful introduction by Mr. Rock of the true chaulmoogra oil-producing species of tree has led to a search for all those other representatives of the Flacourtiaceæ from the seeds of which a similar oil is obtainable, with the result that from Sierra Leone we have secured *Oncoba echinata* (No. 55465), which Dr. F. B. Power assures us has been shown to bear seeds from the oily content of which the true chaulmoogric acid has been isolated. As this is a shrub

and not a forest tree its culture may be more easily accomplished than will be the culture of the Burmese and Siamese trees. Should this be the case the supply of this oil, which has proved so great a remedy for leprosy, may be more quickly insured. The seeds have been supplied by Mr. King-Church, the conservator of forests at Freetown, Sierra Leone, Africa.

In the Plant Introduction Garden at Miami one of the first introductions of the Guatemalan avocado was planted in 1906, and around it were planted other introductions, many of them belonging to the West Indian type. Mr. Simmonds has found this Collins variety a very good stock for our later introductions of Guatemalan avocados, and one of the first of these seedlings to come into bearing has yielded unusually good fruit and shows decided signs of being a hybrid. It has attracted the attention of the growers in Florida, and there has come a demand for it for orchard plantings. We have entered it as a new introduction (No. 55509), calling it the Collinson.

Although it is difficult to wean northerners from the vegetables of their childhood, the scarcity in the summer of green vegetables in the South has made those living there interested in getting forms which will give tender leafy material for greens throughout the hot months. The West Indian spinach (*Amaranthus viridis*, No. 55405) from Montserrat, which Mr. Thompson, of Antigua, assures us produces leaves the size of dessert plates and which throughout the recent severe drought on the island yielded greens twice a week for the table, may be one of these new and valuable summer vegetables.

Dr. Carlos Renson, of Salvador, the discoverer of a species of Meibomia which he states is very resistant to prolonged drought and is at the same time an excellent nitrogen gatherer, has sent in some seeds of this new cover crop (*Meibomia rensoni*, No. 55446) for trial, and it is to be hoped that it will do as well in other tropical regions as it does with him.

The wistaria has come to have so important a place in the ornamental horticulture of the temperate zone that we presume it is quite too much to hope that any of the wistarialike climbers will ever compete with it, although we must confess that *Petraea volubilis* as grown in Florida runs it a close second. Sir Hugh Dixson, of Abergeldie, New South Wales, has sent in seeds of *Millettia megasperma* (No. 55565), which bears sweet-scented wistarialike flower clusters of a darker hue than the Chinese wistaria and in his grounds has proved to be a most beautiful decorative vine.

The great similarity of the Atlantic coast of America to that of eastern and even parts of western China makes the trial of a large number of newly introduced species of ornamental perennials and flowering shrubs from Szechwan of unusual interest. Through the kindness of A. K. Bulley, of Neston, England, it is hoped to place in the hands of American amateurs a large collection of new and as yet unidentified species of Anemone, Campanula, Caragana, Clematis, Delphinium, Deutzia, Euonymus, Fritillaria, Gentiana, Hemerocallis, Iris, Lilium, Lonicera, Rhododendron, and others which have been gathered together by his collector, Dr. F. Kingdon Ward (Nos. 55253 to 55366).

The hibiscus in its various forms is one of the real glories of the Tropics, and through the work of breeding and selection of certain

American amateurs in Honolulu there have been brought into existence some superb varieties which are little known outside of the Hawaiian Islands. Through the kindness of Mrs. J. Rappe Myers, who has gathered together 54 varieties from her various friends, we are now in possession of an extensive collection of these superb forms and shall distribute them in the Tropics (Nos. 55057 to 55064 and 55166 to 55211).

To enrich the park collections of the country we have received from the firm of Vilmorin-Andrieux & Co. some of the rare flowering shrubs which Maurice L. Vilmorin gathered from various parts of the world into his arboretum (Nos. 55071 to 55098). Among them are rare species of Berberis, Buddleia, Cotoneaster, Deutzia, *Ligustrum delavayanum*, *Rosa omeiensis pteracantha*, and others.

The botanical determinations of seeds introduced have been made and the nomenclature determined by H. C. Skeels, and the descriptive matter has been prepared by Paul Russell, who has had general supervision of this inventory.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., February 10, 1923.

38640—23——2

INVENTORY.[1]

54969. MYRCIARIA CAULIFLORA (Mart.) Berg. Myrtaceæ. **Jaboticaba.**

From Minas Geraes, Brazil. Seeds turned over to this office by the Federal Horticultural Board. Received May 11, 1922.

"The *jaboticaba* is one of the best indigenous fruits of southern Brazil, but like many of the others it has received little attention outside of its native home. Its habit of producing the fruit directly upon the trunk and larger limbs, together with the unusual beauty of its symmetrical and umbrageous head of pale-green foliage, make this a peculiarly striking tree. The tree reaches a height of 35 or 40 feet on rich soil, the leaves are narrowly oval, and the small white flowers are produced singly or in clusters on the bark of the trunk and limbs. The fruit is round, one-half to 1½ inches in diameter, maroon-purple in color, and with a rather thick, tough skin. The translucent juicy pulp, white or rose tinged, is of agreeable vinous flavor. These fruits are eaten fresh or as jelly. The tree would probably prove most suitable for our tropical dependencies, although perhaps it could be grown in favorable spots in southern California and southern Florida." (*Wilson Popenoe.*)

54970. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Calgary, Alberta, Canada. Seeds presented by G. M. Stewart, district inspector, seed branch, Department of Agriculture. Received May 31, 1922.

"Produced by a grower in one of our irrigated districts. This grower has been producing from one to two carloads of timothy seed yearly and has been using the one strain of seed all the time." (*Stewart.*)

Locally grown seed introduced for experiments in timothy breeding.

54971. VICIA ERVILIA (L.) Willd. Fabaceæ. **Vetch.**

From Ariana, near Tunis, Africa. Seeds presented by F. Boeuf, chief, Botanical Service of Tunis. Received May 31, 1922.

Introduced for experiments in the use of vetches as forage crops.

54972. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

From Min Hsien, Kansu, China. Seeds presented by Willis H. Ruhl. Received June 2, 1922.

A good variety of *Pai ts'ai* from Min Hsien, Kansu, China.

---

[1] It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

54973. HYLOCEREUS POLYRHIZUS (Weber) Britton and Rose. Cactaceæ.

From Guayaquil, Ecuador. Seeds presented by Dr. Frederic W. Goding, American consul general, Guayaquil. Received June 2, 1922.

"A triangular-stemmed cactus which is very abundant in the region about Guayaquil, where it may be seen climbing the trunks of various trees by means of aerial roots. It is also found in sandy places in the neighborhood of Riobamba, where it does not climb trees. The local name of this cactus is 'pitajaya.' The roundish fruits are 5 to 7 inches long, with a thin, strawberry-red skin inclosing a mass of reddish pulp containing many small black seeds. This pulp is of most delicious flavor, and from it is made a cooling drink, called locally 'refresco,' which is superior to any other I have ever tasted." (*Goding.*)

54974. VICIA FABA L. Fabaceæ. **Broad bean.**

From Granada, Spain. Seeds purchased from Don Juan Leyva, Granada, by Miss Ola Powell, States Relations Service, through Gaston Smith, American consul, Malaga, Spain. Received April 17, 1922.

"*Habas granadina.* A large, tender bean." (*Powell.*)

Introduced for experiments in the use of broad beans as forage.

54975. DIOSCOREA ESCULENTA (Lour.) Burkill. Dioscoreaceæ. **Lesser yam.**

From Mayaguez, Porto Rico. Tubers presented by T. B. McClelland, horticulturist, Porto Rico Agricultural Experiment Station. Received May 4, 1922.

Potato. A small-tubered variety from Africa, resembling the Irish potato and known in Porto Rico as the *Potato* yam. In some places it is considered among the best for home planting, and in a few city markets it brings good prices.

The vines of this variety are slender and round stemmed, with short, strong, sharp spines; there are two longer spines at the base of each leaf petiole. The leaves appear alternately. The edible tubers develop near the crown of the plant much the same as sweet potatoes. They are oval and vary up to 8 inches in length and 2½ inches in diameter. As they are small and not easily injured, these roots can usually be kept longer after being harvested than the large-rooted kinds. They are smooth, dark grayish brown, and at a distance of a few feet are likely to be mistaken for Irish potatoes. The skin is very thin and tough and may, after being broken, be pulled off in strips resembling thin pieces of cherry bark. The interior of the tuber is white, brittle, and firm and practically free from fiber when not allowed to remain too long in the soil; it is over 23 per cent starch. However, tubers which are left in the soil until late in the winter sometimes have a few long and rather strong, longitudinal fibers. When cooked the tubers are fine-grained, tender, and sweeter in flavor than most other varieties.

Since the small yams develop in the surface soil and are not hindered by a compact subsoil, the *Potato* variety thrives best in rich soil and better than most other varieties in clays. It yields poorly in sandy soil and in compact soils produces angular or flattened tubers.

From experiments made in planting at different distances apart it is believed that 3 by 3 feet will give the best results. The variety grows well on ridges or on level land where the drainage is good and the soil is loosened to a good depth. (Adapted from *C. F. Kinman* in *Bulletin 27, Porto Rico Agricultural Experiment Station, p. 13.*)

54976. FRAGARIA sp. Rosaceæ. **Strawberry.**

From Irapuato, Guanajuato, Mexico. Plants presented by Luis Kan, through Arthur Stockdale, Mexico City. Received May 8, 1922.

"Irapuato is famous throughout Mexico for its strawberries, which supply the markets of Mexico City and many other towns of the highlands. Terry's 'Mexico' says: 'The rich soil of the environing country is favorable to the

growth of strawberries (*fresas*) which are on sale throughout the year. A score or more of venders frequent the railway station and offer the berries in small baskets. The best berries are always carefully arranged on the top; the lower layers are apt to be small, if not decayed,' which shows that the Mexicans are not far behind their northern brethren in the matter of preparing their wares for sale. The elevation of Irapuato is 5,800 feet, the climate rather cool, subtropical. I have not been able to learn the history of the Irapuato strawberry fields; probably the first plants were brought here by the Spaniards in relatively recent times and are of European derivation. Only one variety seems to be grown; this is a rather small berry of excellent flavor. It is introduced into the United States for study by our strawberry breeders and for possible use in producing new forms by crossing." (*Wilson Popenoe.*)

54977 and 54978. CERATONIA SILIQUA L. Cæsalpiniaceæ. **Carob.**

From Valencia, Spain. Pods presented by J. D. Wright. Received May 4, 1922. Quoted notes by Mr. Wright unless otherwise specified.

"Carob pods obtained from 'Masia de Mompo,' the estate of Sr. Pelegrin Contell, near Valencia, Spain, March 29, 1922."

54977. "*Matalafera.* Pods of this quality are borne by Sr. Contell's best trees, including his big tree 'El Capitan.'"

54978. "*Roches.* The pods of this variety are very sweet, but are not borne as abundantly as are those of the *Matalafera.*"

54979. TRIFOLIUM REPENS L. Fabaceæ. **White clover.**

From Milan, Italy. Seeds purchased from Fratelli Ingegnoli. Received April 5, 1922.

"*Ladino giant white clover.* A forage plant of the first order, which will grow in any soil capable of being irrigated. It lives for several years if new seeds are sown occasionally. Four cuttings may be obtained, and it makes better hay than other forage plants; it is the best for fattening stock, and also tends to increase the production of milk." (*Fratelli Ingegnoli, Catalogue, 1922.*)

54980. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Florence, Italy. Seeds obtained through W. Roderick Dorsey, American consul. Received April 5, 1922.

"Medium red-clover seed produced in the vicinity of Bologna, Italy." (*Dorsey.*)

Introduced for experimental work by specialists of the Department of Agriculture.

54981. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Cambridge, England. Tubers presented by Prof. R. H. Biffen, School of Agriculture. Received April 7, 1922.

"*Edgecote Purple.* This variety is introduced for the breeding experiments being conducted by J. W. Lesley at Mills College in California. It bears pollen quite freely, and while it is susceptible to the wart disease, it appears to be resistant to the mosaic and leaf-curl diseases. It is also known as the *Wiltshire* variety." (*William Stuart.*)

54982. NYMPHAEA sp. Nymphæaceæ. **Water lily.**

From Livingston, Guatemala. Plant purchased from Louis Bull, United Fruit Co., through Harry Johnson, Hynes, Calif. Received April 11, 1922.

"This grows in the quiet bays near Jocolo, Izabal, Guatemala, and in general habit is similar to the *gracilis* type. The leaves have sinuate margins and red purple lower surfaces. The white, sweet-scented, diurnal flowers are produced in abundance throughout the year." (*Johnson.*)

54983. DIOSCOREA ALATA L. Dioscoreaceæ. **Greater yam.**

From Trinidad, British West Indies. Tubers presented by Claude Connell, through J. B. Rorer, Board of Agriculture, Port of Spain. Received April 20, 1918, and grown at the Plant Introduction Garden, Brooksville, Fla. Numbered April, 1922.

"This is an unidentified variety of yam from a mixed collection of varieties recorded under S. P. I. No. 45990. The individual tubers of this yam are club-shaped to cylindrical, and thus far in Florida have not much exceeded 4 pounds in weight. They remain perfectly white when cooked and are mealy and of very delicate flavor." (*R. A. Young.*)

54984 to 54987.

From Honolulu, Hawaii. Presented by Dr. H. L. Lyon, in charge, Department of Botany and Forestry, Experiment Station of the Hawaiian Sugar-Planters' Association. Received April 7, 1922. Quoted notes by Doctor Lyon unless otherwise stated.

54984. CASSIA NODOSA Buch.-Ham. Cæsalpiniaceæ.

"Seeds collected in Honolulu."

Pink-and-white shower. This magnificent flowering tree is one of the most commonly cultivated ornamental plants in Honolulu, where it is much used for street planting. It is a moderate-sized deciduous tree, with long drooping branches and glossy leaves; during May and June it bears a profusion of beautiful, bright-pink, rose-scented flowers in dense clusters on long stalks. It is native from the eastern Himalayas to the Malay Islands and the Philippines. (Adapted from *Rock, Ornamental Trees of Hawaii, p. 106.*)

For previous introduction, see S. P. I. No. 52797.

54985. KLEINHOVIA HOSPITA L. Sterculiaceæ.

"Seeds collected in Honolulu."

A handsome tree 25 to 45 feet or more in height, native to southern India and the East Indies, with heart-shaped leaves about 4 inches long and wide. The flowering panicles are large and full and bear small rose-colored flowers; the inflated papery pods are about an inch long. The tree thrives well in low moist places and is quite suitable for planting along avenues, for which purpose it is used considerably in Calcutta. (Adapted from *Rock, Ornamental Trees of Hawaii, p. 155.*)

54986. PINANGA INSIGNIS Beccari. Phœnicaceæ. **Palm.**

"Seeds collected in the Philippines by F. X. Williams."

A rather small palm with a slender, smooth trunk about 6 inches in diameter, very graceful feathery leaves, and oval fruits 2 inches in length. The seeds are occasionally used as a substitute for betel nuts in preparing "bûyo," the mixture of leaves of *Piper betle*, lime, and betel nuts, which, when chewed, colors the saliva a characteristic red and is held to be a tonic and general stimulant. (Adapted from *Brown and Merrill, Philippine Palms and Palm Products, pp. 20, 112, and 117.*)

For previous introduction, see S. P. I. No. 37607.

54987. UVARIA sp. Annonaceæ.

"Seeds collected in the Philippines by F. X. Williams."

54988 to 54990.

From Matania el Saff, Egypt. Seeds presented by A. Bircher, director, Middle Egypt Botanic Station. Received April 7, 1922. Quoted notes by Mr. Bircher.

54988. BARYXYLUM AFRICANUM (Sond.) Pierre. Cæsalpiniaceæ. (*Peltophorum africanum* Sond.)

"A handsome evergreen tree with feathery leaves and yellow flowers."

For previous introduction, see S. P. I. No. 50125.

54988 to 54990—Continued.

54989. DIOSPYROS sp. Diospyraceæ. **Persimmon.**

"This evergreen tree grows well in Egypt, bearing heavy crops of fruits the size of apples, with dark-brown, sweet flesh."

54990. VANGUERIA INFAUSTA Burchell. Rubiaceæ.

"A small tree with sessile woolly leaves and bearing clusters of fruits known as 'Mispel' in South Africa. It resembles *Vangueria edulis*, but is better adapted to a continental climate than the latter, which is a native of Madagascar."

A tree 6 to 7 feet high with dense cymes of greenish flowers and edible globular fruits about an inch in diameter, known as "wild medlars" to the colonists in South Africa. (Adapted from *Sim, Forest Flora of the Cape of Good Hope, p. 243.*)

54991. PYRACANTHA CRENULATA YUNNANENSIS Vilm. Malaceæ.

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received April 7, 1922.

"A new variety received from Yunnan, China, by Maurice L. Vilmorin; it differs from the type in its greater vigor, longer spines, and less dentate leaves. The shrub attains a height of 1 to 3 meters (3 to 10 feet). As compared with the type, the fruits are a brighter coral red and are smaller but much more abundant; they hang on the shrub until January." (*Vilmorin-Andrieux & Co., 1920–1922 catalogue.*)

54992. CARICA PAPAYA L. Papayaceæ. **Papaya.**

From Progreso, Yucatan, Mexico. Seeds presented by O. Gaylord Marsh, American consul. Received April 7, 1922.

"Dr. George F. Gaumer, an American scientist at Izamal, Yucatan, has furnished the following information regarding this variety of the papaya: 'The Maya name is *Chacalhaazput* and the English name *mammey* papaya, the latter name being derived from the fact that the edible part of the fruit is of the same color as that of the *mammey* [*Mammea americana* L.]. The fruit is from 10 to 12 inches long and 3 to 6 inches in diameter, with flesh of a very fine flavor. The milky juice of the unripe fruits contains a large amount of papain, an excellent digestive." (*Marsh.*)

For previous introduction, see S. P. I. No. 54330.

54993 and 54994. TRIFOLIUM REPENS L. Fabaceæ. **White clover.**

From Aarhus, Denmark. Seeds presented by S. Sörensen, agricultural attaché, Danish Legation, Washington, D. C. Received April 11, 1922. Quoted notes by Mr. Sörensen.

"Two samples of our best strains of white clover, sent to me by a seed dealer, Fr. Drejer, from Aarhus, Denmark."

54993. "*Norso* (No. 348)."

54994. "*Stryno Hvidklöver* (No. 660)."

54995. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

From Kengtung, Burma. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received April 4, 1922.

"(Kengtung, southeastern Shan States. February 1, 1922.) This variety is much cultivated; the green pods are eaten like string beans and the mature ones like Lima beans. These are greatly relished by the Shan people, as well as by Europeans. The seeds are planted in May, and mature pods are obtained in the cold season." (*Rock.*)

54996. FRAGARIA VESCA SEMPERFLORENS (Duch.) Seringe. Rosaceæ. **Strawberry.**

From Edinburgh, Scotland. Seeds presented by Prof. Isaac Bayley Balfour, Royal Botanic Garden. Received April 14, 1922.

This variety differs from the type in the greater size of all its parts, the fruit in particular, and especially in its habit of producing flowers and fruit continuously throughout the summer. In its red color and delicate flavor the fruit is quite similar to that of the type. (Adapted from *Robinson, The Vegetable Garden, p. 673.*)

54997. PYRUS sp. Malaceæ. **Pear.**

From Chefoo, China. Presented by A. Sugden. Received April 4, 1922.

Pear seeds from Chefoo, China, which are to be grown for use as stock plants for cultivated varieties of apples and pears.

54998. PYRUS PASHIA Buch.-Ham. Malaceæ. **Pear.**

From Kengtung, Burma. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received April 4, 1922.

"(No. 2253. Kengtung, Burma. February 6, 1922.) A large tree about 50 feet in height with a trunk about 2 feet in diameter, found in a bamboo grove on the plains of Kengtung two stages from the Chinese border, at an altitude of about 3,000 feet. The flowers of this variety are pure white without the pink center seen in those found on the slopes of Loi Mwe southeast of Kentung, and the tree is an object of great beauty. The natives let the fruits get black on the tree, in which state they are sweet and are made into jam. The fruits of this variety are larger than usual. The native name is *Mai Kaw Ki Kai.* The sand pears of Yunnan are grafted on this species by the natives, according to a priest of the temple of Wat Ban Sao." (*Rock.*)

54999. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Jesi, Department of Marches, Italy. Seeds purchased through Francesco Archibugi, New York, N. Y. Received April 14, 1922.

Introduced for comparison with American-grown seed.

55000. ARALIA CACHEMIRICA Decaisne. Araliaceæ.

From Stockholm, Sweden. Seeds presented by Dr. Robert E. Fries, director, Botanic Garden. Received April 15, 1922.

This Himalayan species of Aralia is introduced for comparison and breeding experiments with the udo (*Aralia cordata*). It is a lax shrub, 5 to 10 feet in height, with elongated flower panicles a foot in length.

For previous introduction, see S. P. I. No. 52788.

55001. GIRARDINIA PALMATA Gaud. Urticaceæ.

From Sibpur, near Calcutta, India. Seeds presented by Lieut. Col. A. T. Gage, director, Royal Botanic Garden. Received April 15, 1922.

A tall, stout, erect, tufted plant, 4 to 6 feet in height, growing commonly in the temperate and subtropical regions of the Himalayas, where it ascends to 5,000 feet above the sea. It is generally known as the "Nilghiri nettle" and is of considerable importance in its native country because of the fiber obtained from its stalks. This fiber is very long, white, soft, and silky and is used for making fine fabrics and for mixing with wool. While the plant is described as an annual, it has proved, under cultivation, to be a perennial; the young shoots are cut down twice a year for their fiber. The leaves of this species are used as a vegetable among the hills of the Northwest Provinces. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 3, p. 500.*)

55002. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Riga, Russia. Purchased through John P. Hurley, American consul. Received April 14, 1922.

"This seed originated in the former Province of Kurland, but was grown in the district of Doblen, about 40 miles southwest of Riga." (*Hurley.*)

Introduced for comparison with American-grown varieties.

55003. DIOSCOREA ALATA L. Dioscoreaceæ. **Greater yam.**

From Natal, Rio Grande do Norte, Brazil. Tubers presented by E. C. Green. Received April 12, 1922.

"These tubers weigh only a few ounces each and are presumably much below the average. The flesh darkens a little when cooked, but is mealy and of good flavor." (*R. A. Young.*)

55004 to 55024.

From Nishigahara, Tokyo, Japan. Seeds presented by H. Ando, director, Imperial Agricultural Experiment Station. Received April 15, 1922.

55004 to 55023. ECHINOCHLOA CRUSGALLI EDULIS Hitchc. Poaceæ. **Barnyard millet.**

A collection of native varieties of barnyard millets introduced for cultural and breeding experiments.

55004. *Chonakubi.*
55005. *Chosen.*
55006. *Dango.*
55007. *Esashi-shiro.*
55008. *Futagomochi.*
55009. *Gamakashira.*
55010. *Hanamaki.*
55011. *Hida.*
55012. *Hitokara.*
55013. *Kekanjo.*
55014. *Kinshu.*
55015. *Kurohie.*
55016. *Manshu.*
55017. *Mochi-hie.*
55018. *Hanamaki-kuro.*
55019. *Nigiri.*
55020. *Numakunai.*
55021. *Otsu.*
55022. *Yamanome 1.*
55023. *Yamanome 2.*

55024. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

"Timothy seeds produced in Hokkaido." (*Ando.*)

Locally grown timothy introduced for breeding investigations.

55025 and 55026.

From Los Banos, Philippine Islands. Seeds presented by J. E. Higgins, College of Agriculture. Received April 15, 1922.

55025. CASSIA SIAMEA Lam. Cæsalpiniaceæ. **Kassod tree.**

A medium-sized or sometimes a large tree with gray, nearly smooth bark and papery, glabrous leaflets. The small yellow flowers are borne in large pyramidal terminal panicles. The tree is probably native to Burma and is cultivated throughout India and many tropical countries for its hard heavy wood, which is very durable. The heartwood is dark brown to nearly black, in stripes of dark and light; it is used for mallets, walking sticks, for building, and for fuel. (Adapted from *Rock, Leguminous Plants of Hawaii, p. 81.*)

For previous introduction, see S. P. I. No. 54924.

55026. CASSIA TIMORIENSIS DC. Cæsalpiniaceæ.

A rather low tree with slender, downy branches, pale-green leaves up to 9 inches in length, bright-yellow flowers, and thin, glossy, flexible pods sometimes 6 inches long. The tree is distributed throughout the Malay Archipelago and the Philippines. (Adapted from *Hooker, Flora of British India, vol. 2, p. 265.*)

55027. PYRUS CALLERYANA Decaisne. Malaceæ. **Pear.**

From Nanking, China. Seeds purchased from J. L. Buck, acting dean, College of Agriculture, University of Nanking. Received April 15, 1922.

A wild pear from the mountains of western China, where it grows at altitudes of 1,000 to 1,500 meters (3,300 to 5,000 feet). This pear maintains a vigorous and healthy condition under the most trying situations and may prove to be a very valuable blight-resistant stock.

For previous introduction, see S. P. I. No. 49097.

55028. PASSIFLORA MALIFORMIS L. Passifloraceæ.

From Cartagena, Colombia. Seeds presented by H. C. Kluge. Received April 17, 1922.

"The flower of this vine is very beautiful, and the fruit is edible." (*Kluge.*)

55029. AELUROPUS REPENS (Desf.) Parl. Poaceæ. **Grass.**

From Algiers, Algeria. Seeds presented by Dr. L. Trabut, director, Service Botanique. Received April 17, 1922.

"Found at very salty places in the Sahara." (*Trabut.*)

A low, much-branched, rigid, perennial grass from the Mediterranean countries. It roots at the nodes and appears to be partial to sandy places, even close to salt water. (Adapted from *Muschler, Manual Flora of Egypt, vol. 1, p. 129.*)

55030. CITRUS sp. Rutaceæ.

From Holguin, Cuba. Seeds presented by Thomas R. Towns. Received April 11, 1922.

"I have used this shaddock, which is the nonedible white variety, as a stock for 20 years and would be lost without it. For grapefruit it is inclined to gum rather more than the sour orange or rough lemon, but my 10-year-old tangerines, worked on this stock, have 2,500 fruits on some of the trees, and the fruits are fine grained and of good commercial size. The Washington Navel on this stock is also very prolific and bears a full crop every year, and I have had equal success with other round oranges like the King, Valencia, Pineapple, and Lue Gim Gong." (*Towns.*)

55031 to 55039. AVENA SATIVA L. Poaceæ. **Oats.**

From Helsingfors, Finland. Seeds presented by Leslie A. Davis, American consul, through E. G. Montgomery, United States Department of Commerce. Received April 15, 1922. Quoted notes by Mr. Davis.

55031. "*Esa* (0644). A white oat."

55032. "*Jalostettu maatiais* (0144). This variety was obtained by crossing the Kuopio 091 variety with the Guldregn variety. Its kernel is very dark brown, resembling that of the native stock. It has simple requirements and grows here just as well as native stock. The panicle is large and beautiful. The straw is of average length, somewhat better than that of native stock, but not so strong as that of the Guldregn variety. It ripens at the same time as central Finnish native stock, but five days earlier than the Guldregn variety. During experiments of many years it has often given a better crop than the Guldregn variety and a considerably better one than native stocks, with which it has been compared."

55033. "*Kultasade* (*Guldregn*). This variety from southern Finland thrives in northern Finland only in high warm places."

55034. "*Nopsa* (0206). This is a cross between the Norbotten and Ligovo oat varieties. It has a large black chaffy kernel of which the hull forms a considerable percentage. The panicle is not thick and the stalk is strong. It is very early, ripening two weeks before the Guldregn oat. The crop is good, considering its early ripening, but

55031 to 55039—Continued.

it can not compete with later varieties, such as the Guldregn. It does not appear to thrive well in dry places, but it yields well in swampy lands. It is especially suitable for cultivation on swampy lands on account of its maturing so early and because of its strong stalks. This oat must be sown profusely, owing to the large size of its kernel."

55035. "*Osmo 1* (0537). This variety was obtained by crossing Kuopio 091 with the Guldregn variety. The kernel is full, dark brown, and of the size of the Guldregn. The panicle is straight and the straw strong. The straw is not quite so hard as that of the Guldregn, but stands up about as well. It is a little earlier than the first variety here mentioned. It ripens a week before the Guldregn, so that it can well be cultivated in central and northern Finland. It also grows well in swamps."

55036. "*Osmo 2.*"

55037. "*Tuotto* (101). This variety comes from the foreign Clydesdale oat. It has a large, full kernel. The color of the kernel, however, is not satisfactory, since it is brownish gray. The panicle is not thick, but is stiff, and the stalk is somewhat short and strong. The *Tuotto* variety is a late one and ripens four or five days later than the Guldregn variety. It gives good crops and has given better ones than the Guldregn and Veikko varieties. It can be grown profitably only in southern Finland."

55038. "*Veikko* (052). This variety has descended in a direct line from the Pfiffelbacher variety. Its kernel is large, white, and full and has quite a thin hull. Its panicle is straight, and its stalk is strong and of average length. It ripens at the same time as the Guldregn and in experiments has sometimes given better and sometimes poorer crops than the latter, so that it may be considered of about the same value as the Guldregn. It requires perhaps a somewhat better quality of soil than the Guldregn."

55039. "*Voitto* (*Seger*). This variety from southern Finland thrives in northern Finland only in high warm places."

55040. Erythrina poeppigiana (Walp.) O. F. Cook. Fabaceæ.

(*E. micropteryx* Poepp.)

From Mayaguez, Porto Rico. Seeds presented by T. B. McClelland, horticulturist, Porto Rico Agricultural Experiment Station. Received April 17, 1922.

An ornamental red-flowered leguminous tree, 40 to 50 feet in height and covered with short, conical spines. It is a native of the lower Andes of Peru, but is cultivated as a shade tree on coffee plantations in Porto Rico, where it is known as *bucare* and also as *palo de boyo.* (Adapted from *Cook and Collins, Economic Plants of Porto Rico, Contributions from the National Herbarium, vol. 8, p. 139.*)

For previous introduction, see S. P. I. No. 43049.

55041. Sabinea carinalis Griseb. Fabaceæ.

From Dominica, British West Indies. Seeds presented by Joseph Jones, curator, Botanic Gardens. Received April 19, 1922.

"This tree is known locally as *Bois Charibe* and is one of the most showy of our native plants. It is a very fine flowering tree, and I have seen nothing in the Tropics to surpass it as a mass of color. If grown on fairly good land, it will not make a good show; but if planted on a dry, rocky hillside, where it will be scorched by the sun for a period of three or four months each year, it makes a marvelous display of flowers." (*Jones.*)

"Mr. Jones's description of the marvelous color of the *Bois Charibe* and of the rocky hillsides where it grew attracted my attention at once, and I planted a few young seedlings on a dry coral reef in front of my house at Coconut Grove, Fla. They have grown unusually well, and during the first week of

March last year one of them flowered. I have never seen a more beautiful scarlet flower, and Mr. Jones says he has seen nothing in the Tropics to surpass it as a mass of color. The chances seem good that in the *Bois Charibe* we have a small tree which is going to add splashes of red color to the landscapes of southern Florida and one which will thrive on the dry rocky ledges." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 46026.

55042. COFFEA LAURENTII Wildem. Rubiaceæ. **Coffee.**
(*C. robusta* Hort.)

From Kingston, Jamaica. Seeds presented by W. S. Goodman, acting superintendent, Hope Gardens. Received April 17, 1922.

This species, which is native to the Belgian Congo, is introduced for the use of specialists in the Department of Agriculture. It is commonly known as "robusta" coffee.

For previous introduction, see S. P. I. No. 51481.

55043 and 55044.

From Tangier, Morocco. Seeds presented by Jules Goffart, Société d'Horticulture. Received April 17, 1922.

55043. LIMONIUM BRASSICAEFOLIUM × IMBRICATUM. Plumbaginaceæ.
(*Statice brassicaefolium* × *imbricatum.*)

This is a hybrid between *Limonium brassicaefolium*, which has flowers with yellowish white corollas and smooth purple calyxes, and *L. imbricatum*, which has flowers with yellowish white corollas and rather hairy calyxes. Both of these species are shrubby plants about a foot and a half in height, with more or less velvety lobed leaves and winged branches, and both are natives of the Canary Islands.

55044. LIMONIUM FRUTICANS (Webb) Kuntze. Plumbaginaceæ.
(*Statice fruticans* Webb.)

An ornamental shrubby plant, native to the Canary Islands, with rigid, much-branched flower stalks about 2 feet in height, rising from a loose rosette of oval, crisply wrinkled leaves. It bears large flat clusters of bicolored flowers; the snowy white corollas and bright-violet calyxes are made more vivid by the small red bracts and the bright-green wings of the flower stalks. (Adapted from *Flore des Serres et des Jardins de l'Europe, vol. 4, p. 525.*)

For previous introduction, see S. P. I. No. 51148.

55045. ZEA MAYS L. Poaceæ. **Corn.**

From Doi Chang, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received April 4, 1922.

"(Doi Chang, near Chiengmai, Siam. January 10, 1922.) This corn was found at an altitude of 4,500 feet on Doi Chang, the Elephant Mountain; it was grown by the Miao tribe, a jungle people who inhabit the high mountains from northern Siam northward to the Province of Kweichow, China. They are a very primitive people of Chinese origin and do not eat rice but use corn exclusively." (*Rock.*)

55046. BOUEA OPPOSITIFOLIA (Roxb.) Meissn. Anacardiaceæ.
(*B. burmanica* Griffith.)

From Bangkok, Siam. Seeds presented by Y. S. Sanitwongse. Received May 4, 1922.

"The fruit of the *maprang* is of very inferior quality everywhere except at a certain locality north of Bangkok." (*Sanitwongse.*)

An evergreen tree of moderate height, with hard, gray wood which is very durable. It is a relative of the mango and is often cultivated for its edible fruits. It is native to Burma and the Andaman Islands. (Adapted from *Gamble, Manual of Indian Timbers, p. 108.*)

55047 and 55048. Zea mays L. Poaceæ. Corn.

From Prague, Czechoslovakia. Seeds presented by Basil Benzin. Received April 19, 1922. Quoted notes by Mr. Benzin.

Native Czechoslovakian varieties of corn, introduced for cultural and breeding experiments.

55047. "*Bankutka.* A flint variety derived from dent corn by selection, 1917–1921, Levice, Czechoslovakia."

55048. "*Florentinka.* An extra early variety of flint corn, Levice, Czechoslovakia."

55049. Cassia sp. Cæsalpiniaceæ.

From Szemao, Yunnan, China. Seed collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received May 4, 1922.

"(No. 2827. Szemao, Yunnan. March 11, 1922.) A deciduous tree 40 to 50 feet in height, found in the foothills of Szemao at an altitude of 5,000 feet. During March the tree is one mass of large, deep-pink flowers which are 2 inches wide and borne in short racemes all along the branches. It is a most striking tree and can be seen from quite a distance. It is very different from *Cassia nodosa*, which is evergreen, and from *C. bakeriana*, which occurs in northern Siam." (*Rock.*)

55050. Eranthemum purpureum Hort. Acanthaceæ.

From Manila, Philippine Islands. Cuttings presented by P. J. Wester, agricultural adviser, Bureau of Agriculture. Received April 19, 1922.

"A plant with variegated, mostly purplish foliage, grown on the Moro graves in Lanao. The flowers are whitish and inconspicuous. It could probably be used as a bedding plant as far north as Washington or possibly New York." (*Wester.*)

"No place of publication has been found. It may be *Odontonema nitidum* Kuntze. To be grown for identification." (*H. C. Skeels.*)

55051 and 55052.

From Cuzco, Peru. Seeds presented by Prof. Fortunato L. Herrera. Received April 17, 1922.

55051. Chenopodium quinoa Willd. Chenopodiaceæ. Quinoa.

"One of the plants cultivated by the native inhabitants of the highlands of Peru and Bolivia is a species of Chenopodium (*C. quinoa*), and so far as foliage is concerned it is not very unlike our ordinary 'goosefoot' in general appearance. Its seeds, however, are white, or nearly so, and fully three times as large as those of *C. album.* In pre-Columbian times this plant was one of the main foods of the Indians, evidently ranking with the potato and corn in this respect. None of the Old World cereals being known before the discovery, it was only natural that the cultivation of this plant should have extended over a considerable area. In addition to Peru and Bolivia it was probably grown in some parts of Argentina and is known with certainty to have been cultivated in Chile; in fact, there even appears to have been an Araucanian or Mapuche name for it. Doubtless its cultivation at the present time is less extensive than formerly, due in part to the diminished Indian population and in part to an apparent ignorance or indifference on the part of the white population to its real merits as a food. At present it is probably most commonly grown on the Titicaca plateau. It is said to yield abundantly, though it does not seem to have occurred to anyone to measure the yield of a given area. In late April and May some of the fields are red with compact panicles, for this seems the only part of the plant visible from a short distance. Other fields have a greenish cast, there being two or possibly more varieties. On the island of Chiloe, southern Chile, the plant grows taller than any seen about Lake Titicaca, and the foliage is more abundant, though

55051 and 55052—Continued.

whether the latter condition is due to the difference in season or to the lower altitude and more abundant rainfall is uncertain. The grain is used by the Indians in the same manner as rice, being put in soups and made into porridge. It appeals to a North American primarily as a breakfast food and should rank with oatmeal and some of the better wheat preparations. It may be cooked and served in a manner similar to oatmeal, but it becomes even more appetizing if spread out in a tray about an inch deep after steaming and then browned in the oven." (*W. F. Wight.*)

For previous introduction, see S. P. I. No. 46658.

55052. LUPINUS sp. Fabaceæ. **Lupine.**

"*Tarhui.* The seeds are consumed in large quantities in this locality and are of great importance as a foodstuff, having been used since the time of the conquest." (*Herrera.*)

55053 to 55056.

From Chefoo, Shantung, China. Budwood presented by A. Sugden. Received April 17, 1922. Quoted notes by Mrs. Myers.
Sugden.

55053. MALUS sp. Malaceæ. **Crab apple.**

"A white-fruited crab apple."

55054. MALUS sp. Malaceæ. **Crab apple.**

"A red-fruited crab apple."

55055. PYRUS sp. Malaceæ. **Pear.**

"A wild pear."

55056. ZIZIPHUS JUJUBA M'll. Rhamnaceæ. **Jujube.**
(*Z. sativa* Gaertn.)

"The dragon's-claw 'date.'"

An ornamental variety of the jujube with gnarled, twisted branches. It is said to be quite rare in China.

For previous introduction, see S. P. I. No. 22914.

55057 to 55064. HIBISCUS spp. Malvaceæ. **Hibiscus.**

From Honolulu, Hawaii. Seeds presented by Mrs. J. Rappe Myers. Received April 17, 1922. Quoted notes by Mrs. Myers.

"Collected in Honolulu, March 14, 1922."

55057. HIBISCUS sp.

"A very choice mixed collection."

55058. HIBISCUS sp.

"Apricot colored, single."

55059. HIBISCUS sp.

"Single, copper shade, very choice, from Gerrit P. Wilder's garden."

55060. HIBISCUS sp.

"A delicate straw-colored single variety from the Oahu Country Club."

55061. HIBISCUS sp.

"Single, creamy pink, shading to a very dark center."

55062. HIBISCUS sp.

"A beautiful, large, soft-pink single variety."

55057 to 55064—Continued.

55063. HIBISCUS sp.

"A large single white variety from Robbins B. Anderson. This plant produced more and larger flowers than any other white variety on the island."

55064. HIBISCUS sp.

"A beautiful single yellow variety from the experiment station."

55065 to 55067.

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received April 27, 1922.

55065. BASELLA RUBRA L. Basellaceæ. **Malabar nightshade.**

Common white variety. An East Indian plant with creeping stems up to 6 feet in length and oval or heart-shaped, fleshy green leaves. These leaves, which may be eaten like spinach, are abundantly produced throughout the summer, growing in greater profusion as the weather becomes warmer. The plant is cultivated as an annual, the seeds being sown in early spring and the seedlings planted out late in May. (Adapted from *Robinson, The Vegetable Garden, p. 451.*)

For previous introduction, see S. P. I. No. 2006.

The following grasses are introduced for forage-crop experiments:

55066. FESTUCA HETEROPHYLLA Lam. Poaceæ. **Fescue.**

"This European grass is used in mixtures for sterile or sandy soil, especially in mixtures for lawns; the stem blades are flat." (*A. S. Hitchcock.*)

55067. PHALARIS BULBOSA Jusl. Poaceæ. **Grass.**

A perennial tufted grass whose roots penetrate the soil to a depth of nearly 3 feet. It is a native of the Mediterranean countries, but is now cultivated in New South Wales, where it has been found to endure dry conditions remarkably well. It will stand a considerable amount of pasturing; it also makes excellent hay if cut as soon as the flower heads begin to appear. (Adapted from *Agricultural Gazette of New South Wales, vol. 28, p. 715.*)

For previous introduction, see S. P. I. No. 53241.

55068. MANISURIS EXALTATA (L. f.) Kuntze. Poaceæ. Grass.

(*Rottboellia exaltata* L. f.)

From Salisbury, Rhodesia. Seeds presented by H. G. Mundy, chief agriculturist and botanist, Department of Agriculture. Received April 24, 1922.

"*Kokoma grass.* This grass, which is a native of Rhodesia, is an extremely vigorous, free-seeding, leafy annual. It hardly withstands drought as well as Sudan grass, but gives a considerably larger yield of fodder. Owing to the freedom with which the seeds are shed it is inclined to volunteer very freely, and in rich, low-lying, arable land it may become a troublesome weed. The rather harsh, stringing hairs on the lower culms are an objection, but not a very serious one." (*Mundy.*)

For previous introduction, see S. P. I. No. 46983.

55069 and 55070. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.

(*Glycine hispida* Maxim.)

From Omagari, Akita-Ken, Japan. Seeds presented by Isabura Nagai, director of substation, Rikuu Branch, Agricultural Experiment Station. Received April 29, 1922.

"It has been our experience that the smooth, or 'Hadaka,' varieties of soy beans from Japan do not shatter their seed nearly so easily as the hairy sorts." (*W. J. Morse.*)

"The pods of the first variety are smooth and of the second variety slightly hairy. Both varieties were grown at our experiment station." (*Nagai.*)

55069. *Hadaka No. 3.* 55070. *Hadaka No. 260.*

55071 to 55098.

From Paris, France. Seeds presented by Vilmorin-Andrieux & Co. Received April 17, 1922.

55071 to 55075. BERBERIS spp. Berberidaceæ. **Barberry.**

55071. BERBERIS AGGREGATA PRATTII C. Schneid.

(Wilson No. 1300.)

A hardy shrub 6 to 10 feet in height, with slender, 3-parted spines, oval leaves, narrow panicles of yellow flowers, and egg-shaped salmon-red fruits about one-fourth of an inch in length. It is a native of western China and grows very freely under cultivation at Kew, England. (Adapted from *Curtis's Botanical Magazine, pl. 8549.*)

For previous introduction, see S. P. I. No. 44527.

55072. BERBERIS DIELSIANA Fedde.

"(Purdom No. 543.) A spreading, loosely branched, Chinese shrub often 10 feet high, with elliptic leaves that are whitish beneath. The beauty of the red fruits is accentuated by the bronze color of the leaves in the fall." (*Skeels.*)

For previous introduction, see S. P. I. No. 54066.

55073. BERBERIS POIRETI C. Schneid.

(Purdom No. 35.) Forma *weichangensis.* A form of the above species from Weichang, Chihli, China; it differs slightly from the type in the size of the bracts and in spine characters.

55074. BERBERIS sp.

(M. Vilmorin No. 4775.)

55075. BERBERIS sp.

(Wilson No. 135.)

55076. BETULA MEDWEDIEWI Regel. Betulaceæ. **Birch.**

A lofty tree, native to Mount Somlia, Transcaucasia, where it is found in forest borders at an altitude of 6,800 feet. The papery, oval leaves, smooth and olive green on the upper surface, are paler below. (Adapted from *Gartenflora, vol. 36, p. 383.*)

For previous introduction, see S. P. I. No. 52933.

55077. BUDDLEIA JAPONICA Hemsl. Loganiaceæ.

A deciduous shrub 3 to 5 feet in height, sparsely branched and of an open habit. The very narrow dark-green leaves are up to 8 inches in length, and the pale-lilac flowers are densely crowded in terminal branched panicles. This shrub is a native of Japan and is rather striking in autumn with its long, dense, drooping panicles of fruit. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 272.*)

55078. CALLICARPA GIRALDIANA Hesse. Verbenaceæ.

(Wilson No. 439.)

An ornamental shrub from western China, with membranous bright-green dentate leaves and many-flowered cymes of purple flowers followed by dense clusters of round violet-purple fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, p. 366.*)

For previous introduction, see S. P. I. No. 44076.

55079. CASTANEA SATIVA Mill. Fagaceæ. **Chestnut.**

Variety *heterophylla.* A form with leaves of various shapes.

55080 to 55086. COTONEASTER spp. Malaceæ.

55080. COTONEASTER ADPRESSA Bois.

A dwarf Cotoneaster from China which does not exceed 10 inches in height, but forms a clump several feet in diameter, with the

55071 to 55098—Continued.

stems rooting easily where they touch the ground. It has solitary flowers with pink-tipped petals and bright-red fruits. (Adapted from *Vilmorin and Bois, Fruticetum Vilmorinianum, p. 116.*)

For previous introduction, see S. P. I. No. 27407.

55081. COTONEASTER MOUPINENSIS Franch.

The common cotoneaster in the thickets and margins of woods throughout western Szechwan at altitudes of 4,000 to 7,500 feet. It is 6 to 15 feet high, with white flowers and jet-black fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 163.*)

For previous introduction, see S. P. I. No. 53688.

55082. COTONEASTER MULTIFLORA Bunge.

A deciduous shrub or small tree 10 to 12 feet high, with slender, arching branches, papery leaves, branched clusters of white flowers, and roundish red fruits. This elegant cotoneaster is native to the northwestern borders of China and makes a most charming appearance when the branches are wreathed with the abundant flowers in May and June. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 413.*)

For previous introduction, see S. P. I. No. 40168.

55083. COTONEASTER SALICIFOLIA RUGOSA (E. Pritz.) Rehd. and Wils.

"A very handsome Chinese shrub having long pendulous branches covered with much-wrinkled lanceolate leaves which have the undersurface covered with down. The berries are small, globular, and bright scarlet. They are borne in clusters and combined with the autumn tints of the foliage produce a very pretty effect." (*Journal of the Royal Horticultural Society, vol. 38, p. cclii.*)

For previous introduction, see S. P. I. No. 53694.

55084. COTONEASTER sp.

Received as *Cotoneaster myrtiflora*, for which a place of publication has not been found.

55085. COTONEASTER sp.

(M. Vilmorin No. 4690.)

55086. COTONEASTER sp.

(M. Vilmorin No. 5015.)

55087. DEUTZIA SCHNEIDERIANA LAXIFLORA Rehder. Hydrangeaceæ.

(Wilson No. 767.)

A shrub about 6 feet in height from western China. The flowers, nearly half an inch in length, are borne in broadly pyramidal but rather loose clusters. (Adapted from *Gardeners' Chronicle of America, vol. 24, p. 273.*)

For previous introduction, see S. P. I. No. 52640.

55088. DEUTZIA sp. Hydrangeaceæ.

(M. Vilmorin No. 7264.)

55089. LIGUSTRUM DELAVAYANUM Hariot. Oleaceæ. **Privet.**

(Wilson No. 1290.)

This hardy shrub was first discovered by Abbé Delavay in the mountains of Yunnan, China. In habit it is prostrate-spreading, except for a few perfectly upright branches which rise from the center of the shrub to a height of about 10 feet. The shining dark-green foliage, which is remarkably persistent, reminds one of a myrtle and, with the

55071 to 55098—Continued.

white flowers and blue-black fruits, makes this plant a very attractive ornamental. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 601*, and from *Revue Horticole, vol. 73, p. 495.*)

For previous introduction, see S. P. I. No. 49677.

55090. PRUNUS sp. Amygdalaceæ. **Plum.**

Received as *Prunus korolkowii*, for which a place of publication has not been found.

55091. PYRACANTHA sp. Malaceæ.

(M. Vilmorin No. 6257.)

55092. RIBES MEYERI TURKESTANICUM Jancz. Grossulariaceæ.

A shrub 3 to 4 feet in height, native to Turkestan, with blunt-pointed leaves, reddish purple flowers, and deep-purple, shiny, juicy fruits of no pronounced flavor. (Adapted from *E. Janczewski, Monographie des Groseilliers, p. 297.*)

For previous introduction, see S. P. I. No. 32761.

55093. RIBES sp. Grossulariaceæ.

(M. Vilmorin No. 7947.)

55094 and 55095. ROSA OMEIENSIS PTERACANTHA (Franch.) Rehd. and Wils. Rosaceæ. **Rose.**

55094. A shrub 3 to 9 feet tall, with white flowers and red fruits having usually a shorter stalk than in the type. Very common on the wind-swept mountain sides of western Szechwan. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 332.*)

For previous introduction, see S. P. I. No. 53738.

55095. Variety *fructu rubra*. A bushy rose about 3 feet in height, with large oval prickles, small thickly set leaves, solitary single white flowers, and rather large red fruits. It is native to Yunnan, China. (Adapted from *Vilmorin and Bois, Fruticetum Vilmorinianum, p. 99.*)

55096. SORBARIA ARBOREA SUBTOMENTOSA Rehder. Rosaceæ.

A variety with the lower surfaces of the leaflets densely hairy; similar to the type, but with larger flowers. It is native to western Szechwan, China, where it forms a shrub up to 20 feet in height with rather small white flowers. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 47.*)

55097. SORBARIA sp. Rosaceæ.

Received as *Sorbaria pallasii grandiflora*, for which a place of publication has not been found.

55098. VITIS DAVIDII (Carr.) Foex. Vitaceæ. **Grape.**

A luxuriant climber, native to central China, with the young shoots covered with spiny, somewhat-hooked bristles. The shining dark-green leaves are heart shaped, toothed, and up to 8 inches in width, and the fruits are said to be black, about two-thirds of an inch in diameter, and of pleasant flavor. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 667*, under *Vitis armata.*)

For previous introduction, see S. P. I. No. 41877.

55099. GOSSYPIUM sp. Malvaceæ. **Kidney cotton.**

From Yeungkong, Kwangtung, China. Seeds presented by Dr. W. H. Dobson. Received April 18, 1922.

A kidney cotton with fiber of medium length.

55100 to 55104.

From Kisantu, Belgian Congo. Seeds presented by Père J. Gillet, S. J., Jardin d'Essais de Kisantu. Received April 29, 1922.

55100. COFFEA sp. Rubiaceæ. **Coffee.**

"Coffee-hybrid Le Roy." (*Gillet.*)

55101. MUSA ARNOLDIANA Wildem. Musaceæ. **Banana.**

The plant grows to a height of 12 to 15 feet without suckering, and the leaves are about 7 feet in length. The inflorescence is short and drooping, and the fruits are nearly 4 inches long. The plant is native to the Belgian Congo. (Adapted from *Fawcett, The Banana, p. 278.*)

55102. PIMENTA OFFICINALIS Lindl. Myrtaceæ. **Allspice.**

A small tree, native to tropical America, whose dried, unripe berries constitute the allspice of commerce. It prefers a hot and rather dry climate, with alluvial, well-drained soil. Jamaica is the source of our supply of allspice at the present time.

For previous introduction, see S. P. I. No. 44824.

55103. PSIDIUM sp. Myrtaceæ.

"A small shrub." (*Gillet.*)

55104. VOANDZEIA SUBTERRANEA (L.) Thouars. Fabaceæ.

A creeping annual leguminous plant which matures its fruits in the same manner as the peanut, whence its common name "groundnut." It is native to tropical Africa and is extensively grown in that continent, as well as in other tropical countries, for its edible seeds.

For previous introduction, see S. P. I. No. 54704.

55105. GARCINIA TINCTORIA (DC.) W. F. Wight. Clusiaceæ.

(*G. xanthochymus* Hook. f.)

From Honolulu, Hawaii. Seeds presented by Gerrit P. Wilder. Received April 4, 1922.

Introduced for testing as a stock for the mangosteen (*Garcinia mangostana* L.).

For previous introduction, see S. P. I. No. 40103.

55106 to 55165. HOLCUS SORGHUM L. Poaceæ. Sorghum.

(*Sorghum vulgare* Pers.)

From Khartum, Anglo-Egyptian Sudan. Seeds presented by W. A. Davie, Director of Agriculture, Sudan Government, through H. N. Vinall, agronomist, Office of Forage-Crop Investigations, United States Department of Agriculture. Received April, 1922.

"Samples of local varieties collected by the Sudan Department of Agriculture throughout Anglo-Egyptian Sudan in the region tributary to Khartum." (*Vinall.*)

55106. *Gassabi.*
55107. *Feterita.*
55108. *El Medeek el Abiad.*
55109. *Khamis Wad Gah.*
55110. *Asfar Homasi.*
55111. *Kaliko.*
55112. *Gusiri.*
55113. *Feterita.*
55114. *Hamisi.*
55115. *Abu Khammeir.*
55116. *Wad el Nebehi.*
55117. *Um Ghorirrat.*
55118. *Shallouft el Naga.*
55119. *Mogd Wad Fadl.*
55120. *Wad Abu Gutta.*
55121. *Baid el Wiz.*
55122. *Ankolib Gassab.*
55123. *Hemaisc.*
55124. *Kalm Ahmer.*
55125. *Higiri.*

55106 to 55165—Continued.

55126. *Feterita.*
55127. *Abu Shanab.*
55128. *Banan Tokar.*
55129. *Wad Brageh.*
55130. *Mogd Abagro Abiad.*
55131. *Neili Neili.*
55132. *El Safra.*
55133. *Ahamar.*
55134. *Shikari.*
55135. *Kargi.*
55136. *Abgara.*
55137. *Kalam.*
55138. *Abu Homeer.*
55139. *No. 15.*
55140. *Ganie.*
55141. *El hacherag.*
55142. *Gussiri Tokar.*
55143. *Shamsham.*
55144. *Balyani.*
55145. *Beid el Tor.*
55146. *Mugood.*
55147. *Asfar.*
55148. *Wad Fahal.*
55149. *Wad bahana.*
55150. *Wad Akhar.*
55151. *Nugood.*
55152. *No. 40.*
55153. *No. 12.*
55154. *Hegeira.*
55155. *Abu Koliga.*
55156. *No. 8.*
55157. *Abu Tarakish.*
55158. *Moru.*
55159. *Naggad Abiad.*
55160. *Laben el Shah.*
55161. *Makway Abiad.*
55162. *Khass.*
55163. *Waga.*
55164. *Wad Bgota.*
55165. *Mogd Khamgan Asfer.*

55166 to 55211. Hibiscus spp. Malvaceæ. Hibiscus.

From Honolulu, Hawaii. Cuttings secured by Mrs. J. Rappe Myers, in Honolulu, and sent in by J. M. Westgate, agronomist in charge, Agricultural Experiment Station. Received March 27 and 30, 1922. Quoted notes by Mrs. Myers, unless otherwise stated.

The Chinese hibiscus is one of the most popular and useful decorative plants of tropical gardens and is cosmopolitan in its distribution. Probably in no other region, however, has so extensive a series of choice horticultural forms been brought together as in Hawaii. In most parts of the Tropics only two or three varieties are seen, usually the single scarlet and the double scarlet. In recent years some excellent sorts have been distributed by Florida nurserymen, yet it is felt that much more can and should be done to popularize the newer delicately colored varieties, and toward this end the following collection has been secured in Honolulu by Mrs. J. Rappe Myers. They should prove of real value in southern Florida and in Porto Rico, the Canal Zone, and the American Tropics generally.

"Most of these varieties are the productions of Gerrit P. Wilder."

55166 to 55192. "Collected March 11, 1922."

55166 to 55170. "Collected in Mrs. George Sherman's garden."

55166. Hibiscus syriacus L.

"(No. 1.) A lavender variety; originally from Japan."

55167. Hibiscus sp.

"(No. 2.) Single pink, shading white to the center."

55168. Hibiscus sp.

"(No. 3.) Single orange."

55169. Hibiscus sp.

"(No. 4.) Single, light pink."

55170. Hibiscus sp.

"(No. 5.) 'Laurita Sherman.'"

55166 to 55211—Continued.

55171. HIBISCUS sp.

"(No. 6.) A most beautiful, single, buff variety from Mrs. W. Woon's garden."

55172. HIBISCUS sp.

"(No. 7.) Fringed single red. From Haugh's garden."

55173. HIBISCUS sp.

"(No. 8.) A red-and-pink Fuchsia variety from Mrs. Rosa's garden."

55174. HIBISCUS sp.

"(No. 9.) Buff, single, with red center; from Helen Rosa's garden."

55175. HIBISCUS sp.

"(No. 10.) Single and double, light yellow; from Country Club grounds."

55176 to 55179. "From John Walker's garden."

55176. HIBISCUS sp.

"(No. 11.) Single, buff, light-red center."

55177. HIBISCUS sp.

"(No. 12.) 'Agnes Gault' variety."

55178. HIBISCUS sp.

"(No. 13.) Double yellow."

55179. HIBISCUS sp.

"(No. 14.) 'Mrs. Hassinger.'"

55180 to 55182. "From Mr. Anderson's garden."

55180. HIBISCUS sp.

"(No. 15.) Double red."

55181. HIBISCUS sp.

"(No. 16.) Bright red; double."

55182. HIBISCUS sp.

"(No. 17.) Largest, single white."

55183 to 55192. "From L. A. Thurston's garden."

55183. HIBISCUS sp.

"(No. 18.) Single, reddish mahogany banded in cream."

55184. HIBISCUS sp.

"(No. 19.) Single, rose pink; very fine."

55185. HIBISCUS sp.

"(No. 20.) Single, corn color, deep-red center."

55186. HIBISCUS sp.

"(No. 21.) Cerise pink, single."

55187. HIBISCUS sp.

"(No. 22.) Single, lavender buff."

55188. HIBISCUS sp.

"(No. 23.) Single, orange, crimson center."

55189. HIBISCUS sp.

"(No. 24.) Double, American Beauty shade."

55166 to 55211—Continued.

55190. HIBISCUS sp.

"(No. 25.) Single, flame red."

55191. HIBISCUS sp.

"(No. 26.) Single, orange pink."

55192. HIBISCUS sp.

"(No. 27.) Double, cerise."

55193 to 55211. "Collected March 14, 1922."

55193 to 55207. "From Gerrit P. Wilder's garden."

55193. HIBISCUS sp.

"(No. 28.) 'Nora Swanzy Sport,' unnamed, single, copper colored."

55194. HIBISCUS sp.

"(No. 29.) Single, yellow with red center; not named."

55195. HIBISCUS sp.

"(No. 30.) Double yellow. Very difficult to grow; no name."

55196. HIBISCUS sp.

"(No. 31.) 'Lita Wight' or 'Jamaica.' Single yellow."

55197. HIBISCUS sp.

"(No. 32.) 'Queen Kashumanu.' Single, salmon pink and orange."

55198. HIBISCUS sp.

"(No. 33.) 'Nora Swanzy.' Single, copper colored."

55199. HIBISCUS sp.

"(No. 34.) 'Auata Focke.' Single, lavender."

55200. HIBISCUS sp.

"(No. 35.) 'Lillian Nordica.' Single, pink with white center."

55201. HIBISCUS sp.

"(No. 36.) 'Lillian Wilder.' Single pink."

"Strong growth, erect, freely branching, light-gray bark, brownish twigs. Leaves ovate, serrate, slightly pubescent, shiny, dark green, 2 to 3¾ inches wide, 3½ to 5¼ inches long, petiole 2 inches. Flower 7 inches wide, delicate crimson pink with darker veins and crimson eye; column crimson, 3½ inches; peduncle 2¼ inches; bracts six to eight, slender, spreading, green. Sometimes self-seeds; crosses freely." (*E. V. Wilcox and V. S. Holt, Hawaii Agricultural Experiment Station, Bulletin No. 29, p. 38.*)

55202. HIBISCUS sp.

"(No. 37.) 'Helen Kimball.' Single."

55203. HIBISCUS sp.

"(No. 38.) 'Wilhelmina Tenny.' Single, orange yellow."

55204. HIBISCUS sp.

"(No. 39.) Hybrid; almost double."

55205. HIBISCUS sp.

"No. 40.) Hybrid; cross between white and pink."

55166 to 55211—Continued.

55206. HIBISCUS sp.

"(No. 41.) Yellow single."

55207. HIBISCUS sp.

"(No. 42.) Hybrid."

55208. HIBISCUS sp.

"(No. 43.) Single, light pink; from Punahou school grounds."

55209. HIBISCUS sp.

"(No. 44.) Single coral; from Punahou school grounds."

55210. HIBISCUS sp.

"(No. 45.) 'Eleanor Atherton.' Single, light pink; from F. C. Atherton's garden."

55211. HIBISCUS sp.

"(No. 46.) Double cerise from Frank Atherton's garden."

55212 to 55245.

From Gitschin, Bohemia, Czechoslovakia. Plants presented by Josef Mazanek. Received June 10, 1920. Numbered June, 1922.

These Czechoslovakian varieties of apples and pears are introduced for the use of specialists in this country.

55212 to 55232. MALUS SYLVESTRIS Mill. Malaceæ. **Apple.** (*Pyrus malus* L.)

55212. (No. 1.) *Ananasová reneta* (*Reinette Ananas*).

55213. (No. 2.) *Citronové zimni* (*Citron d'hiver*).

55214. (No. 3.) *Červené tvrdé* (*Cousinotte rouge d'hiver*).

55215. (No. 4.) *Holovouské malinové* (Raspberry apple from Holovous).

55216. (No. 5.) *Mazánkovo malinové* (Raspberry apple of Mr. Mazanek).

55217. (No. 6.) *Kminová reneta* (*Reinette du Canada*).

55218. (No. 7.) *Kožená reneta* (*Reinette grise française*).

55219. (No. 8.) *Limburské* (*La Limbourgeoise*).

55220. (No. 9.) *Mišenské* (*Edelborsdorfer*).

55221. (No. 10.) *Panenské* (*Rother Jungfern Apfel*).

55222. (No. 11.) *Parména zlatá* (*Reine de Reinettes*).

55223. (No. 12.) *Prince Albert* (*Lane's Prince Albert*).

55224. (No. 13.) *Reneta Pomfelie* (*Reinette de Pomphelia*).

55225. (No. 14.) *Řehtáč soudkovitý* (*Prinzenapfel, Pomme melon*).

55226. (No. 15.) *Štrymka* (*Gros-Bohn*).

55227. (No. 16.) *Šalove* (*Cardinal blanc flambaut*).

55228. (No. 17.) *Šampaňska reneta* (*Reinette blanche de Champagne*).

55229. (No. 18.) *Šmitbergrova reneta* (*Smitberger's Reinette*).

55230. (No. 19.) *Štětinské* (*Stetting Rouge*).

55231. (No. 20.) *Haglee Crab.*

55232. (No. 21.) *Holovouské malinoré* (Raspberry apple from Holovous).

55212 to 55245—Continued.

55233 to 55245. PYRUS COMMUNIS L. Malaceæ. **Pear.**

55233. (No. 2.) *Amanlisova máslovka* (*Beurré d'Amnalis*).

55234. (No. 4.) *Avranska* (*Bonne Louise d'Avranches*).

55235. (No. 6.) *Ananswa česká* (Bohemian ananas pear).

55236. (No. 9.) *Dielova* (*Beurre Diel*).

55237. (No. 11.) *Kozačka Stutgartská* (*Rousselet de Stuttgart*).

55238. (No. 12.) *Křivice* (*Beurre Clairgeau*).

55239. (No. 13.) *Pastornice* (*Poire de Curé*).

55240. (No. 15.) *President Mas.*

55241. (No. 16.) *Pstružka* (*Forelle*).

55242. (No. 17.) *Solanka.*

55243. (No. 18.) *Wienská* (*Triomphe de Vienne*).

55244. (No. 19.) *Hardenpontova* (*Beurré Hardenpont*).

55245. (No. 20.) *Ratajská.*

55246 to 55252. MUSA PARADISIACA SAPIENTUM (L.) Kuntze. Musaceæ. **Banana.**

From Honolulu, Hawaii. Shoots presented by Willis T. Pope, horticulturist, Hawaii Agricultural Experiment Station. Received April 10, 1922.

55246. (No. 4490.) *Chamaluco.* The plant is from 10 to 15 feet in height with medium-sized leaves; when grown in fertile soil the bunches of fruit are rather large. There are two types—one with green and the other with gray fruits. The greater part of these fruits are eaten cooked at the time when other varieties are ripe. (Adapted from *Bulletin 25, Departamento de Agricultura y Trabajo, Porto Rico, p. 19.*)

For previous introduction, see S. P. I. No. 19303.

55247. "(No. 4489.) *Ice Cream.* This banana is said to have been introduced into the Hawaiian Islands from the Malay region of Asia. It was first grown at the Hawaii Station, Honolulu, in 1900, offshoots having been obtained from William Chamberlain, of Honolulu.

"Description of the plant: A 1-year old clump grown from a single offshoot usually consists of 8 or 10 plants, varying from a size suitable for transplanting up to full-grown plants maturing fruit. The average height of the full-grown plant is about 20 feet. Each mature plant usually has 10 or 12 light-green leaves at one time. The trunk is light green with parts of the outer leaf sheaths varying from light green to dark brown. The light brown often has a slight tinge of pink. The leaf blades are shiny light green above with a frosty lighter green below, due to a powdery bloom which does not rub off easily. The young leaves often have the under side of the midrib tinged with pink. Small offshoots have leaves with both margin and midrib of a delicate pink. The bases of the petioles of the larger leaves have abrasionlike marks of brown to dark brown such as are not uncommon on older plants of several other varieties.

"Fruit: The bunch of the *Ice Cream* variety is medium in size, varying in weight from 30 to 60 pounds. In color it is strikingly different from most other yellow bananas. It has a whitish or bluish green color before maturity, which is due to the powdery bloom covering the entire fruit. This powdery bloom remains quite evident after the yellowing and full ripening of the fruit. The bananas usually ripen irregularly on the bunch. After ripening, the bananas very soon

55246 to 55252—Continued.

become soft and have a tendency to fall from the bunch. The hands of bananas are usually seven or eight in number and average about 14 bananas to the hand. Each fruit is from 5 to 7 inches in length and from 2 to 2½ inches in diameter, with a weight of 7 or 8 ounces. The skin of the ripe fruit is of medium thickness, and tender, and separates, leaving a portion of its inner lining on the pulp of the fruit when peeled. The pulp is rather spongy and white or creamy white in color, suggestive of ice cream, hence its name. The flavor is slightly tart and applelike." (*Pope.*)

55248. "(No. 4499.) *Iholena.* The plant is of low growth, perhaps about 9 feet to the top of the leaves as an average. The petioles are rather stout, light green with pink on the edges; leaves slightly bronze colored on the under surface when young. The bunch is rather small. The fruits are arranged loosely and stand out almost at right angles from the axis of the bunch. The skin of immature fruits is light green, turning to yellow before ripening. The form of the fruit is angular; when thoroughly ripe, beginning to turn black, it is regarded as one of the best of the native bananas for eating raw. It is also good for cooking. The flesh is pink." (*J. E. Higgins, Bulletin 7, Hawaii Agricultural Experiment Station.*)

For previous introduction, see S. P. I. No. 22064.

55249. "(No. 4731.) *Kona Maiamaule* or *Miamauli*, as it is sometimes called, is, I believe, the best cooking banana in these islands, and I believe it has commercial possibilities in a locality like Kona, where much good land may be had with sufficient rainfall, little wind, and rich soil overlying a most favorable underdrainage." (*Pope.*)

55250. "(No. 4497.) *Largo.* Introduced into Hawaii from Mexico. The plant is of medium height, and the fruits, borne in long-stemmed bunches, have buttery pinkish flesh of fair flavor." (*J. E. Higgins, Bulletin 7, Hawaii Agricultural Experiment Station.*)

55251. "(No. 4495.) *Porto Rico.* This variety was introduced from Porto Rico by the Hawaii station in 1904.

"Description of the plant: Average height about 25 feet. Mature trunks become about 10 or 12 inches in diameter at the base. Each trunk supports 10 or 12 green leaves about 12 feet long. The color of the trunk sheaths varies from a shade of pink to dark brown. The color of the leaves is dull green above and light green below, with abrasionlike markings at the base of the petioles where they begin to extend from the sheath.

"Description of the fruit: The bunch is small to medium in size, weighing 25 to 40 pounds, and usually consists of five or six hands. The banana is smooth with angle ridges not prominent, apex or blossom end somewhat beaked, and not well filled, even on bunches which show plump fruit from good culture. The skin is bright yellow and peels well when fruit is ripe. The flesh is light yellow and rather juicy, sweet, with a pleasant flavor somewhat like that of the apple. The fruit ripens uniformly and holds well on the bunch.

"The *Porto Rico* is a very desirable banana for growing in the home garden, as most of its qualities are such as are desired in a fresh fruit for home use." (*Pope.*)

55252. "(No. 4492.) *Red Cuban.* This is the proper name of the largest sized variety of the various red bananas; large both as to plant and fruit. A well-grown bunch has 8 to 10 hands and individual fingers of from 2 to 2½ inches in diameter. This is the red banana of commerce." (*Goldsmith H. Williams, Crescent City, Fla.*)

55253 to 55366.

From Neston, Cheshire, England. Seeds presented by A. K. Bulley. Received April 20, 1922. Quoted notes by Mr. Bulley, unless otherwise stated.

"Collected by Dr. F. Kingdon Ward in Szechwan, China."

55253. ANDROSACE SPINULIFERA (Franch.) Kunth. Primulaceæ.

"(No. 4042.) An erect plant with rose-pink flowers."

A hairy alpine plant with narrowly oval leaves and a scape up to 8 inches high bearing heads of purplish flowers. It is native to the mountains of central China. (Adapted from *Engler, Das Pflanzenreich, vol. 22, p. 184.*)

55254. ANDROSACE sp. Primulaceæ.

"(No. 4388.) Rose pink, darker eye."

55255. ANEMONE RUPICOLA Cambess. Ranunculaceæ.

"(No. 4276.)"

A robust Chinese anemone about a foot in height which produces an abundance of showy flowers that are pure white with the outer sepals rosy lilac. (Adapted from *The Garden, vol. 79, p. 272.*)

For previous introduction, see S. P. I. No. 38999.

55256. CAMPANULA sp. Campanulaceæ.

"(No. 4605.) A dwarf plant with violet flowers."

55257. CAMPANULA sp. Campanulaceæ.

"(No. 4805.) A plant with pale-blue flowers."

55258. CARAGANA sp. Fabaceæ.

"(No. 4147.) Flowers sulphur yellow."

55259. CARDAMINE sp. Brassicaceæ.

"(No. 4483.) Collected at 13,000 to 14,000 feet altitude. A plant growing a foot high with fragrant purple flowers."

55260. CLEMATIS sp. Ranunculaceæ.

"(No. 4585.) Purple flowers with silver stamens."

55261. CLEMATIS sp. Ranunculaceæ.

"(No. 4877.) Clusters of straw-yellow flowers."

55262. CODONOPSIS sp. Campanulaceæ.

"(No. 4446.) A plant 15 inches in height with purple flowers."

55263. CODONOPSIS sp. Campanulaceæ.

"(No. 4618.) Collected at 13,000 to 14,000 feet elevation. A plant 8 to 12 inches high with pale lavender-blue flowers."

55264. CREMANTHODIUM sp. Asteraceæ.

"(No. 4210.) A plant with nodding purple flowers."

55265. CREMANTHODIUM sp. Asteraceæ.

"(No. 4619.) Sulphur-colored flowers."

55266. CREMANTHODIUM sp. Asteraceæ.

"Nodding yellow flowers."

55267. CREPIS sp. Cichoriaceæ.

"Collected at 13,000 feet elevation."

55268. CYNOGLOSSUM sp. Boraginaceæ.

"(No. 4093.) A plant with deep-blue flowers."

55253 to 55366—Continued.

55269. DELPHINIUM sp. Ranunculaceæ. **Larkspur.**

"(No. 4570.)"

55270. DEUTZIA sp. Hydrangeaceæ.

"(No. 4537.) A plant with white flowers."

55271. DRABA sp. Brassicaceæ.

"(No. 4150.) Tufted golden yellow flowers."

55272. EUONYMUS sp. Celastraceæ.

"(No. 4526.) A plant growing from 10 to 15 feet in height."

55273. FRITILLARIA sp. Liliaceæ.

"(No. 4030.) Flowers dull yellowish green, spotted and speckled with chocolate."

55274 to 55279. GENTIANA spp. Gentianaceæ.

55274. GENTIANA DETONSA Rottb.

"(No. 4757.)"

A gentian native to the cold regions of northeastern Asia, with a very short stem and oblong leaves arranged more or less in a basal rosette. The flowers, borne singly, are deep blue with the corolla lobes wavy at the tips. (Adapted from *Turczaninow, Flora Baicalensi-Dahurica, No. 13, p. 322.*)

55275. GENTIANA sp.

"(No. 4637.) Deep-blue flowers."

55276. GENTIANA sp.

"(No. 4859.) Bright-blue flowers; plant more or less prostrate."

55277. GENTIANA sp.

"(No. 4941.) Steel-blue flowers."

55278. GENTIANA sp.

"(No. 4968.) Bright-violet flowers."

55279. GENTIANA sp.

"(No. 4992.) Violet flowers."

55280. HEDYCHIUM sp. Zinziberaceæ.

"(No. 3792.) A plant growing 6,000 to 7,000 feet above A-lu-shih."

55281. HEMEROCALLIS sp. Liliaceæ.

"(No. 4776.) A plant 8 to 12 inches in height with fawn-orange flowers."

55282. INCARVILLEA sp. Bignoniaceæ.

"(No. 4197.) A tall plant with sulphur-yellow flowers."

55283 to 55292. IRIS spp. Iridaceæ. **Iris.**

55283. IRIS sp.

55284. IRIS sp.

"(No. 3791.)"

55285. IRIS sp.

"(No. 4025.) Deep-violet, almost black, flowers."

55286. IRIS sp.

"(No. 4073.) A dwarf plant with violet flowers; collected at 13,000 to 14,000 feet elevation."

55253 to 55366—Continued.

55287. IRIS sp.

"(No. 4101.) Lemon and black crests."

55288. IRIS sp.

"(No. 4193.) Collected at 13,000 feet elevation."

55289. IRIS sp.

"(No. 4243.) Violet fold markings on falls."

55290. IRIS sp.

"(No. 4433.) Slate-blue flowers."

55291. IRIS sp.

"(No. 4434.) Violet fold markings."

55292. IRIS sp.

"(No. 5000a.) Collected at 9,000 to 10,000 feet elevation."

55293 to 55295. LILIUM spp. Liliaceæ. **Lily.**

55293. LILIUM sp.

"(No. 4074.) Solitary nodding canary-colored flowers."

55294. LILIUM sp.

"(No. 4242.) Plant 3 to 4 feet high with pale-purple flowers."

55295. LILIUM sp.

"(No. 4245.) Flowers brownish yellow with trumpets finely spotted over a white ground."

55296. LONICERA sp. Caprifoliaceæ. **Honeysuckle.**

"(No. 4134.) Large, scarlet, translucent fruits."

55297. LONICERA sp. Caprifoliaceæ. **Honeysuckle.**

"(No. 4192.) A plant 6 to 10 inches high with pale-purple flowers."

55298. LYCHNIS sp. Silenaceæ.

"(No. 4236.) Very small white or pinkish flowers; calyx bladdery, pale green striped with chocolate."

55299. LYCHNIS sp. Silenaceæ.

"(No. 4964.) A dwarf plant with pale purplish pink flowers."

55300 to 55304. MECONOPSIS spp. Papaveraceæ.

55300. MECONOPSIS ACULEATA Royle.

"(No. 4171.)" A biennial Himalayan plant with hairy stems and rosettes of blunt-pointed leaves. The flowers, bright blue with golden yellow throats, are borne in spikelike racemes, the flowers opening from the top of the raceme downward. (Adapted from *The Garden, vol. 75, p. 226.*)

55301. MECONOPSIS PRIMULINA Prain.

"(No. 4008.)"

A plant found in stony places in the eastern Himalayas, at 12,000 to 14,000 feet altitude. The leaves are narrow and the flowers bright blue. (Adapted from *Annals of Botany, vol. 20, p. 350.*)

55302. MECONOPSIS PSEUDOINTEGRIFOLIA Prain.

"(No. 4169.)" A stemless hairy plant from southwest Tibet, China, with narrow leaves and 1-flowered scapes; the flowers are bright yellow and up to 3 inches in diameter. (Adapted from *Annals of Botany, vol. 20, p. 353.*)

For previous introduction, see S. P. I. No. 51750.

55253 to 55366—Continued.

55303. MECONOPSIS sp.

"(No. 4164.) A plant growing a foot high, with sky-blue flowers."

55304. MECONOPSIS sp.

"(No. 4640.) Violet flowers."

55305. OREOCHARIS sp. Gesneriaceæ.

"(No. 3995.) Yellow drooping flowers."

55306. PHLOMIS sp. Menthaceæ.

"(No. 4644.) Pale-pink flowers."

55307. PICEA sp. Pinaceæ. **Spruce.**

"(No. 3954.) A graceful tree 50 feet in height, growing at 9,000 to 11,000 feet altitude."

55308 to 55351. PRIMULA spp. Primulaceæ. **Primrose.**

55308. PRIMULA BELLA Franch.

"(No. 4082.) Violet or purple flowers."

In damp, sandy, mountain pasture land on the Mekong-Salwin Divide, western Yunnan, China, this attractive primrose was originally collected. It is little more than 2 inches in height, but bears beautiful pale-rose or deep bluish rose flowers with greenish white eyes, fairly fragrant. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 4, p. 225.*)

For previous introduction, see S. P. I. 48353.

55309. PRIMULA BLATTARIFORMIS Franch.

"(No. 4520.)"

A primrose from limestone regions in Yunnan, China; in general appearance it resembles the smooth mullein, *Verbascum blattaria*, hence its name. The leaves form a close rosette, and the lilac flowers are borne in spikelike racemes. (Adapted from *Journal of the Royal Horticultural Society, vol. 39, p. 145.*)

55310. PRIMULA BREVIFOLIA Forrest.

"(No. 4173.)"

From a rosette of bright-green, oblong leaves rises a purplish scape which ends in a cluster of a half dozen or more drooping flowers; each has a dark-purple calyx and a fringed, blue-purple corolla. The plant is native to Yunnan, China. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 57, p. 207.*)

55311 and 55312. PRIMULA DRYADIFOLIA Franch.

A somewhat shrubby Chinese primrose with small leaves and large, drooping, rose-colored flowers with dark-purple bracts. (Adapted from *Journal of the Royal Horticultural Society, vol. 39, p. 165.*)

For previous introduction, see S. P. I. No. 48359.

55311. "(No. 4100.)" **55312.** "(No. 4109.)"

55313 and 55314. PRIMULA MALVACEA Franch.

A primrose from the mountains of Yunnan, China, densely covered with short hairs, with bright-green leaves about 3 inches in length and thick scapes which bear two or three umbels of reddish flowers. (Adapted from *Engler, Das Pflanzenreich, vol. 22, p. 26.*)

55313. "(No. 4351.)" **55314.** "(No. 4181.)"

55253 to 55366—Continued.

55315 to 55319. PRIMULA MUSCARIOIDES Hemsl.

A primrose with rather fleshy light-green leaves 4 or 5 inches in length. The scapes, twice as long as the leaves, bear the heads of deep purple-blue or almost violet flowers. The plant inhabits moist open places on the edges of forests in Yunnan, China. (Adapted from *Curtis's Botanical Magazine, pl. 8168.*)

55315. "(No. 4436.)"

55316. "(No. 4180.)"

55317. "(No. 4077.)"

55318. "(No. 4225.)"

55319. "(No. 4748.)"

55320 to 55332. PRIMULA NIVALIS Pall.

This species is found in every part of the world where primroses grow excepting South America; it varies considerably according to its geographic location. The rather thick, ribbon-shaped leaves are often coated with silver or golden meal, and the flowers, usually blue or purple but sometimes white, are borne in large clusters. (Adapted from the *Journal of the Royal Horticultural Society, vol. 39, p. 160.*)

For previous introduction, see S. P. I. No. 48369.

55320. "Deep Tyrian purple with an eye almost black."

55321 and 55322. "(No. 4055.)"

55323 and 55324. "(No. 4080.)"

55325. "(No. 4141.)"

55326 and 55327. "(No. 4176.)"

55328 to 55330. "(No. 4385.)"

55331. "(No. 4911.)"

55332. "(No. 5000 K.)"

55333 and 55334. PRIMULA POISSONI Franch.

"(No. 4024.)"

A stout, smooth Chinese primrose with rigid, leathery, oblong, pale-green leaves 2 or 3 inches long and a solitary flower stalk which bears one or more whorls of pink flowers. (Adapted from *Curtis's Botanical Magazine, pl. 7216.*)

55335 and 55336. PRIMULA SECUNDIFLORA Franch.

"(No. 4175.)"

This is one of the finest Chinese primroses; it is a native of the Likiang Mountains in northwestern Yunnan, China, where it ascends almost to snow level, 15,000 feet above the sea. On the lower plateaus, at 11,500 feet altitude, this plant forms dense colonies with scapes up to 14 inches in height. The fragrant flowers are a beautiful shade of deep crimson, faintly tinged with purple, and droop gracefully from the scapes. The calyxes are ruddy purple, marked with white lines along the margins. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 51, p. 281.*)

For previous introduction, see S. P. I. No. 48375.

55337 and 55338. PRIMULA SIKKIMENSIS Hook.

A robust primrose from rather wet situations in the Himalayas at altitudes of 12,000 to 17,000 feet. It sends up strong flower stems a foot or two in height, which bear numerous bell-shaped pale-yellow fragrant flowers. This species is hardy in England. (Adapted from *Robinson, English Flower Garden, p. 739.*)

For previous introduction, see S. P. I. No. 48378.

55337. "(No. 4930.)"

55338. "(No. 4179.)"

55253 to 55366—Continued.

55339. PRIMULA SINOPURPUREA Balf. f.

"(No. 4181.)"

This is one of the most striking primroses of the *nivalis* group. It is native to Yunnan, China, and is a stout herbaceous plant usually about 4 inches high. The narrow leaves are thinly papery, with yellow mealy lower surfaces, and the stout scapes bear deep-violet flowers. (Adapted from *Curtis's Botanical Magazine, pl. 8777.*)

For previous introduction, see S. P. I. No. 48379.

55340. PRIMULA VINCIFLORA Franch.

"(No. 4172.)"

A rather tall Chinese primrose, sometimes over a foot in height, with beautiful flowers of a deep indigo-purple shade; the calyx tube is yellowish at the base. In its native home it grows in masses of 20 to 30 plants in one clump. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 46, p. 344.*)

For previous introduction, see S. P. I. No. 48381.

55341. PRIMULA sp.

"(No. 3920.) Flowers pinkish crimson with a yellow eye."

55342. PRIMULA sp.

"(No. 3951.) Orange-colored flowers."

55343 and 55344. PRIMULA sp.

"(No. 5000 J.) A plant growing at 8,000 feet altitude, with purplish crimson flowers."

55345. PRIMULA sp.

"(No. 4445.)"

55346. PRIMULA sp.

"(No. 4225.)"

55347. PRIMULA sp.

"(No. 4275.)"

55348. PRIMULA sp.

"(No. 4181.)"

55349. PRIMULA sp.

"(No. 4174.)"

55350. PRIMULA sp.

"(No. 4081.)"

55351. PRIMULA sp.

"A plant 8 to 10 inches high, growing at 9,000 to 10,000 feet altitude."

55352. PYROLA sp. Pyrolaceæ.

"(No. 4262.) Cream-colored flowers."

55353. RHEUM sp. Polygonaceæ.

"(No. 3794.)"

55354 to 55359. RHODODENDRON spp. Ericaceæ.

55354. RHODODENDRON sp.

55355. RHODODENDRON sp.

"(No. 4160.) A snowy white, dwarf alpine plant."

55356. RHODODENDRON sp.

"(No. 4170.) Bell-shaped, lemon flowers."

55357. RHODODENDRON sp.

"(No. 4177.) A plant 6 to 8 feet in height; flowers pink with dark spots."

55253 to 55366—Continued.

55358. RHODODENDRON sp.

"(No. 4456.) A bush 2 to 3 feet in height."

55359. RHODODENDRON sp.

"(No. 4486.) A plant 5 feet in height."

55360 to 55364. SAXIFRAGA spp. Saxifragaceæ.

55360. SAXIFRAGA sp.

"A yellow variety found in woods."

55361. SAXIFRAGA sp.

55362. SAXIFRAGA sp.

"(No. 4628.) Orange-colored flowers; plant 6 to 9 inches in height."

55363. SAXIFRAGA sp.

"(No. 4654.) Flowers yellow."

55364. SAXIFRAGA sp.

"(No. 4905.) A plant 6 to 9 inches in height with chocolate-colored flowers."

55365. SWERTIA sp. Gentianaceæ.

"(No. 4977.) A plant 2 to 4 inches high."

55366. VERATRUM sp. Melanthiaceæ.

"(No. 4832.) An erect plant 12 to 15 inches in height with violet flowers."

55367. CUCURBITA PEPO L. Cucurbitaceæ. **Squash.**

From Paris, France. Seeds presented by Vilmorin-Andrieux & Co. Received May 8, 1922.

The "Naples squash" has trailing stems, usually about 10 feet long, and dull-green leaves with grayish white veins and spots. The cylindrical fruit is up to 2 feet in length, with smooth dark-green skin which becomes yellow when the fruit is ripe. The orange-colored flesh is abundant and sweet. This variety is very productive, and the fruit is of excellent quality, keeps well, but ripens rather late. (Adapted from *Robinson, The Vegetable Garden, p. 326.*)

55368. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Lodi, Italy. Seeds purchased from Consorzio Agrario Cooperativo Lodigiano, through William H. Stevenson, International Agricultural Institute, Rome, Italy. Received May 8, 1922.

Introduced for cultural experiments and comparison with American-grown varieties.

55369. CROTALARIA JUNCEA L. Fabaceæ. **Sunn hemp.**

From Honolulu, Hawaii. Seeds presented by J. M. Westgate, agronomist in charge, Agricultural Experiment Station. Received May 9, 1922.

Introduced for testing as a green manure, for which purpose it is used in India. It is, however, also used in that country as a fiber plant and as a catch crop.

For previous introduction, see S. P. I. No. 43502.

55370 and 55371. Rubus spp. Rosaceæ.

From Sitka, Alaska. Plants and roots presented by C. C. Georgeson, agronomist in charge, Agricultural Experiment Station. Received May 17, 1922.

Introduced for cultural and breeding experiments.

55370. Rubus chamaemorus L. **Cloudberry.**

The cloudberry is of circumpolar distribution, and the edible yellowish fruits are much prized by natives of the Arctic regions. The plant is creeping in habit and is frequently found in peat bogs.

For previous introduction, see S. P. I. No. 24379.

55371. Rubus spectabilis Pursh. **Salmon berry.**

The salmon berry is a native of northwestern North America from California to Alaska; it is a vigorous plant with canes 5 to 15 feet in length and large, conical, salmon-colored fruits.

For previous introduction, see S. P. I. No. 23452.

55372. Lapageria rosea Ruiz and Pav. Liliaceæ. **Copihue.**

From Angol, Chile. Seeds purchased from F. L. Crouse, Instituto Agricola Bunster, Angol. Received May 19, 1922.

"*Copihue.* This, the national flower of Chile, has been occasionally grown in northern greenhouses, where it creates a genuine sensation when in bloom. It is a climbing plant of slow growth, with slender, wiry stems and bright-crimson tubular flowers about 3 inches in length. In southern Chile huge bunches of these blossoms are brought to the railway stations and sold to passing travelers. The plant requires an acid soil." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 54621.

55373 and 55374. Juglans spp. Juglandaceæ. **Walnut.**

From Buenos Aires, Argentina. Nuts presented by D. S. Bullock, agricultural commissioner, Bureau of Markets and Crop Estimates. Received May 13, 1922. Quoted notes by Mr. Bullock.

55373. Juglans sp.

"From the eastern foothills of the Andes at Limoncito, Rio Blanco, or Iruya, Province of Salta. Collected in August, 1921, by A. G. Maddren."

55374. Juglans sp.

"From the Sierra de Lumbrera, a well-watered small mountain range just east of the Andes, in the Department of Metan, Province of Salta. The 'Nogal' trees grow along the small creeks at an altitude of 3,000 to 4,000 feet. Collected by D. S. Birkett."

55375 to 55398.

From Copenhagen, Denmark. Presented by Government Seed Control. Received May 11, 1922. Quoted notes by Dr. A. S. Hitchcock, of the United States Department of Agriculture.

The Danish Government, in cooperation with the seed growers of Denmark, is conducting extensive tests of commercial crops of value for cultivation there. These seeds are selections of some of their more promising varieties.

55375. Alopecurus pratensis L. Poaceæ. **Meadow foxtail.**

(No. 40.) "Meadow foxtail is sometimes used as a meadow grass in the eastern United States. It is recommended for mixtures on moist soil, being nutritious and producing early forage. It is an erect grass 2 to 3 feet tall."

55375 to 55398—Continued.

55376. ANTHYLLIS VULNERARIA L. Fabaceæ. **Kidney vetch.**

(No. 32.) A perennial herb found throughout Europe, northern Africa, and Asia, which is grown for sheep fodder and is particularly recommended for lime soils. In Norway it is native as far north as 70°. (Adapted from *Von Mueller, Select Extra-Tropical Plants, p. 48.*)

55377. ARRHENATHERUM ELATIUS (L.) Mert. and Koch. Poaceæ. (*A. avenaceum* Beauv.)

(No. 37.) "This is occasionally cultivated in humid regions in the United States as a meadow grass; it is a fairly satisfactory forage grass."

55378. AVENA SATIVA L. Poaceæ. **Oats.**

(No. 49.)

55379 and 55380. BETA VULGARIS L. Chenopodiaceæ. **Beet.**

55379. (No. 44.) 55380. (No. 45.) Sugar beet.

55381. BRASSICA NAPUS L. Brassicaceæ. **Rape.**

(No. 47.)

55382. DACTYLIS GLOMERATA L. Poaceæ. **Orchard grass.**

(No. 36.) "A well-known meadow and pasture grass, cultivated in the humid regions of the United States."

55383. DAUCUS CAROTA L. Apiaceæ. **Carrot.**

(No. 46.)

55384. FESTUCA DURIUSCULA L. Poaceæ. **Hard fescue.**

(No. 39.) "This grass, rare in America, is used in mixtures for lawns, especially for sterile or stony soil."

55385. FESTUCA ELATIOR L. Poaceæ. **Meadow fescue.**

(No. 38.) "Meadow fescue is cultivated for hay and pasture in humid regions of the United States."

55386. HORDEUM DISTICHON PALMELLA Harlan. Poaceæ. **Barley.**

(No. 50.)

55387. LOLIUM MULTIFLORUM Lam. Poaceæ. **Italian rye-grass.**

(No. 35.)

55388. LOTUS CORNICULATUS L. Fabaceæ.

(No. 31.) An excellent fodder, and considered a valuable element in meadows and pastures in Australia and Tasmania, where it is native. (Adapted from *Maiden, Useful Native Plants of Australia, p. 134.*)

For previous introduction, see S. P. I. No. 48634.

55389. MEDICAGO LUPULINA L. Fabaceæ. **Black medic.**

(No. 30.)

55390. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

(No. 29.)

55391. NOTHOLCUS LANATUS (L.) Nash. Poaceæ. **Velvet grass.** (*Holcus lanatus* L.)

(No. 43.) "Velvet grass has value as a meadow grass on moist sandy or sterile soil where other grasses will not thrive. It is an erect grass 2 to 3 feet tall."

55392. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

(No. 33.)

55393. POA PRATENSIS L. Poaceæ. **Kentucky bluegrass.**

(No. 42.)

55375 to 55398—Continued.

55394. POA TRIVIALIS L. Poaceæ. **Rough-stalked meadow grass.**

(No. 41.) A grass with stems decumbent at the base. Not only the stems but also the leaves and sheaths are very rough. The panicle is 2 to 5 inches long.

55395. SECALE CEREALE L. Poaceæ. **Rye.**

(No. 48.)

55396. TRIFOLIUM HYBRIDUM L. Fabaceæ. **Alsike clover.**

(No. 28.)

55397. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

(No. 26.)

55398. TRIFOLIUM REPENS L. Fabaceæ. **White clover.**

(No. 27.)

55399 to 55404. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

From Lucknow, United Provinces, India. Seeds presented by F. H. Johnson, superintendent, Government Horticultural Gardens. Received May 9, 1922.

Seeds of six distinct varieties of Kharbusa (melons).

55399. *Chitta.* 55400. *Khurra.*

55401 and 55402. *Safada.* This is perhaps the finest of Indian melons and is grown in sandy loam along river banks. It is the size of a very large orange, flattened at both ends, and white inside and out. (Adapted from *Watt, Commercial Products of India, p. 438.*)

55401. *Safada* (big). 55402. *Safada* (Mandyaon).

55403. *Sarda.* A fine variety cultivated in India, originally introduced from Kabul, Afghanistan, for the wealthy natives of the Punjab. The seeds of this melon are distinguished by their very large size. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 156.*)

55404. Mixed.

55405. AMARANTHUS VIRIDIS L. Amaranthaceæ.

From Antigua, Leeward Islands. Seeds presented by Edwin A. Thompson, junior assistant, Imperial Department of Agriculture. Received May 16, 1922.

"I obtained this variety recently in Montserrat; the seeds were from locally grown plants of a special type of West Indian spinach, which is an undoubted acquisition. The plant becomes about 5 feet in height, and during its early growth the leaves are large, about the size of a dessert plate. During the recent extreme drought in Antigua I have been able to have a side dish of this vegetable at least twice a week." (*Thompson.*)

55406 and 55407. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Galicia, Austria. Tubers purchased from Heinrich Dotkowski & Son. Received May 18, 1922.

55406. "*Petronius.* This variety is fairly vigorous in growth and the plants are large, compact, and healthy with strong erect medium green stems. The leaves are medium to large and rather dark green; the flowers are white, and pollen is produced rather freely. The tubers are light skinned, the eyes medium in number and depth. It is not a very productive variety, being chiefly valuable for breeding purposes." (*William Stuart.*)

For previous introduction, see S. P. I. No. 33487.

55407. *Rubin.*

55408 and 55409. RUBUS MACROCARPUS Benth. Rosaceæ. **Colombian berry.**

From Bogota, Colombia. Presented by W. O. Wolcott. Received May 10, 1922.

"Seeds of very large wild blackberries." (*Wolcott.*)

55410. GOSSYPIUM ANOMALUM Wawra. Malvaceæ. **Cotton.**

From Asmara, Eritrea, Africa. Seeds presented by the director, Eritrea Colonization Service. Received April 19, 1922.

"This cotton has a very short staple, but it is soft and shining like silk. It is used by native textile workers." (*A. M. Tancredi, Notizie e Studi sulla Colonia Eritrea, p. 110.*)

According to one authority this is the only truly wild cotton in Africa; it has been found in Angola and also in the Anglo-Egyptian Sudan. It forms a shrub 5 to 10 feet in height, with rough branches, reddish flowers, and oval capsules about an inch in length, much smaller than cultivated cotton. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 211.*)

55411. AMERIMNON SISSOO (Roxb.) Kuntze. Fabaceæ. **Sissu.**
(*Dalbergia sissoo* Roxb.)

From Dehra Dun, United Provinces, India. Seeds presented by R. S. Hole, forest botanist. Received May 16, 1922.

A large deciduous tree native to tropical and subtropical regions of the lower Himalayas. It is highly esteemed for its very durable wood, which seasons well, does not warp or split, and is strong and elastic. The thin layer of sapwood is white, while the heartwood is brown, with darker longitudinal veins, and is very hard. (Adapted from *Gamble, Manual of Indian Timbers, p. 124.*)

55412. DIOSCOREA ALATA L. Dioscoreaceæ. **Greater yam.**

From India. Tuber presented by E. R. Sasscer, Federal Horticultural Board, United States Department of Agriculture. Obtained by L. M. Scott, inspector, Boston, Mass., from baggage on the steamship *City of Valencia.* Received April 19, 1922.

"*Purple Ceylon.* In India this yam is said to be called 'King of Yams.' The specimen received weighs about 13 ounces, is roughly spherical, and has deep-purple flesh, being similar in these respects to the *Purple Ceylon* previously received from Porto Rico (S. P. I. No. 54900). The flesh retains its color when cooked, is smooth in texture, and of very good flavor." (*R. A. Young.*)

55413. COIX LACRYMA-JOBI L. Poaceæ. **Job's-tears.**

From Muang Hai, southern Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received May 9, 1922.

"(No. 2485. February 17, 1922.) Collected along brooks near Muang Hai, southern Yunnan, at an altitude of 4,000 feet; may be of interest to cereal specialists." (*Rock.*)

For previous introduction, see S. P. I. No. 49516.

55414 to 55416. CITRUS spp. Rutaceæ.

From Shaowu, Fukien, China, Presented by Rev. J. E. Walker, Shaowu Mission of the American Board. Received May 16, 1922.

"Seeds from varieties equal to the best in Amoy, Fukien." (*Walker.*)

55414. CITRUS sp.

55415. CITRUS sp.

55416. CITRUS sp.

55417. Prunus majestica Koehne. Amygdalaceæ. Cherry.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received May 16, 1922.

"(No. 2884. Between Puerhfu and Mohei, Yunnan. March 18, 1922.) A tree 25 to 30 feet in height with ascending branches, growing on exposed dry ridges 6,000 feet or more in altitude. The cherries, which are borne in March, are oblong to ovoid, bright red, with scanty but juicy bitter flesh. The tree grows in company with *Pyrus yunnanensis*, *P. pashia*, *Larix* sp., and several other species of Prunus and Malus which are now in flower." (*Rock.*)

55418. Phaseolus semierectus L. Fabaceæ.

From Gatun, Canal Zone. Seeds presented by J. A. Close. Received May 18, 1922.

"The long narrow pods are of a leguminous plant which I am trying out as a cover crop. I first noticed the dark-purple flowers, about the size and shape of sweet peas, along the railroad track at Gatun, but the plant did not grow well in the gravel. When planted in heavy clay mixed with charcoal, however, it developed wonderfully, and the vines formed a dense mat which allowed no other vegetation to grow under or through it. The plants grew about 3 feet high, and in the last month of the dry season the ground was covered with the decaying leaves. New plants have appeared a hundred feet from the old planting." (*Close.*)

55419 to 55423. Acacia spp. Mimosaceæ.

From Khartum, Anglo-Egyptian Sudan. Seeds presented by E. E. Massey, Government botanist, Sudan Government Department of Agriculture, through Maj. R. G. Archibald, Wellcome Tropical Research Laboratories. Received May 15, 1922.

Introduced for experimental planting in the southwestern United States in connection with gum-arabic production.

55419. Acacia albida Delile.

A low, much-branched tree with whitish bark, axillary spikes of white flowers, and flat, oblong pods. It is a native of tropical Africa and yields a gum similar to gum arabic. The leaves are eaten by goats, and the bark is used in curing leather. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 339, 1871*, and *Kew Bulletin of Miscellaneous Information, Additional Series IX, pt. 2, p. 288.*)

For previous introduction, see S. P. I. No. 44922.

55420. Acacia catechu (L. f.) Willd.

A moderate-sized tree with dark-brown, much-cracked bark, very finely pinnate leaves, spikes of white or pale-yellow flowers, and narrow dark-brown pods. It is found in most parts of India and Burma, sometimes becoming over 70 feet tall with a circumference of 8 or 9 feet. It yields a pale-yellow gum, with tears often an inch in diameter, which is a strong mucilage and a better substitute for gum arabic than the gum of *Acacia arabica*. This species is also the source of cutch, the resinous extract obtained by boiling down a decoction obtained from chips of the heartwood; from this extract a dull-red dye may be obtained.

The sapwood is yellowish white, and the heartwood, which is extremely hard, is either light or dark red. The wood is very durable, takes a fine polish, and is not attacked by white ants or shipworms. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 27.*)

For previous introduction, see S. P. I. No. 50711.

55421. Acacia nubica Benth.

An umbrella-shaped shrub 4 to 5 feet high, with dark greenish bark, small leaflets, and rather large heads of fragrant yellowish flowers. It is native to Abyssinia and the western coast of Arabia. (Adapted from *Linnaea, vol. 35, p. 337.*)

55419 to 55423—Continued.

55422. ACACIA SPIROCARPA Hochst.

An umbrellalike tree 20 to 40 feet in height with snow-white heads of fragrant flowers and narrow, spirally twisted pods. It is quite common in dry, open, rocky places in Abyssinia at an altitude of about 4,500 feet. (Adapted from *Chiovenda, Osservazioni Botaniche nell'Abissinia, p. 101.*)

55423. ACACIA VERUGERA Schweinf.

This Abyssinian acacia forms a handsome tree 60 feet in height, with very long spines, light-green feathery foliage, and round heads of pale-yellow flowers. (Adapted from *Linnaea, vol. 35, p. 340.*)

For previous introduction, see S. P. I. No. 44924.

55424 to 55441.

From Harbin, northern Manchuria. Presented by B. W. Skvortzow. Received May 10, 1922. Quoted notes by Mr. Skvortzow.

A collection of seeds from northern Manchuria.

55424 and 55425. AMARANTHUS spp. Amaranthaceæ.

Introduced for testing as possible sources of leaf vegetables for diabetics.

55424. AMARANTHUS CAUDATUS L.

The young leaves of this plant are used like spinach.

55425. AMARANTHUS PANICULATUS L.

The seeds of this plant are much used by Mexican Indians for making sweetmeats; the seeds are first roasted, then mixed with sirup made of honey or of sugar and water, rolled into balls, and eaten like sugared pop corn. The seeds are also ground and cooked in small cakes known as *alegría*, these cakes being eaten in large quantities by the poorer classes. (Adapted from *note of Mrs. Zelia Nuttall under S. P. I. No. 46310.*)

For previous introduction, see S. P. I. No. 54407.

55426. CORIANDRUM SATIVUM L. Apiaceæ. **Coriander.**

"A Chinese variety."

55427. FAGOPYRUM VULGARE Hill. Polygonaceæ. **Buckwheat.**

A medium-sized variety with brownish gray seeds.

55428. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

A reddish yellow variety with black hulls.

55429. ORYZA SATIVA L. Poaceæ. **Rice.**

"Water rice."

55430 to 55432. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ. **Adsuki bean.**

55430. Straw-colored variety.

55431. Small red variety.

55432. "From the Chinese market."

Large variety with mottled red and white seeds.

55433 and 55434. PHASEOLUS AUREUS Roxb. Fabaceæ. **Mung bean.**

55433. Seeds dull grayish green.

55434. "From the Chinese market."

Seeds bright green.

55424 to 55441—Continued.

55435 and 55436. PHLEUM spp. Poaceæ.

Introduced in connection with timothy-breeding experiments.

55435. PHLEUM ALPINUM L.

"Seeds of wild plants from the Ussuri district, Siberia."

55436. PHLEUM PRATENSE L. **Timothy.**

"From the Nicolsk-Ussurisk Agricultural Experiment Station."

Contains some *Phleum alpinum.*

55437 to 55441.

Introduced for forage-crop experiments.

55437. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

"Black soy beans."

55438 and 55439. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ. **Yard-Long bean.**

55438. Black variety. **55439.** Brown variety.

55440 and 55441. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

55440. Seeds mottled with straw color and light chocolate.

55441. "From the market."

55442 and 55443.

From Foochow, China. Seeds presented by C. R. Kellogg. Received May 20, 1922.

55442. ALLIUM ODORUM L. Liliaceæ. **Onion.**

In Japan this onion is cultivated for its leaves, which are eaten as greens; in the spring the leaves are borne luxuriantly by the old bulbs, becoming about a foot in length. (Adapted from *Useful Plants of Japan, Agricultural Society, Tokyo, p. 17.*)

55443. MELASTOMA REPENS Desr. Melastomataceæ.

"A low perennial shrub which bears beautiful roselike flowers all summer long. The flowers last only one day, but because of their great number the shrub is always well covered. The fruits are said to be eaten, but have the lack of flavor so common in Chinese fruits." (*J. B. Norton.*)

For previous introduction, see S. P. I. No. 48718.

55444. HIBISCUS ROSA-SINENSIS L. Malvaceæ.

From Manila, Philippine Islands. Cuttings presented by H. H. Boyle, Manila, through the Bureau of Agriculture. Received May 25, 1922.

White Gumamela. A white variety of the well-known and exceedingly variable Chinese hibiscus.

55445. CASIMIROA TETRAMERIA Millsp. Rutaceæ. **Matasano.**

From Tegucigalpa, Honduras. Seeds presented by G. K. Donald, American consul. Received May 27, 1922.

A Central American tree about 30 feet in height, with pale warty branches, digitate leaves about 8 inches long, and axillary panicles of greenish flowers. The edible fruit, approximately the size of an orange, has a green skin with spiny protuberances sparsely scattered over the surface; the white or yellow flesh is sweet or slightly sour and incloses two or three large black seeds. (Adapted from *Field Museum of Natural History, Chicago, Publications, Botanical Series, vol. 1, p. 401.*)

This species has fruited in the Miami Plant Introduction Garden and its large attractive fruits prove it to be one worthy of serious study by Florida horticulturists.

For previous introduction, see S. P. I. No. 21030.

For illustrations of a white sapote and its fruits, see Plates I and II.

55446. MEIBOMIA RENSONI Painter. Fabaceæ.

From San Salvador, Salvador. Seeds presented by Dr. Carlos Renson, Director del Laboratorio Químico. Received May 23, 1922.

"These seeds gave a perfect germination in from 4 to 10 days." (*Renson.*)

The *barajillo* is a rapidly growing shrub, native to the Republic of El Salvador at altitudes ranging from 2,000 to 4,000 feet. Under favorable conditions it sometimes becomes a small tree about 18 feet high. The trifoliolate leaves are softly hairy and up to 3½ inches in length, and the small purplish flowers are borne in terminal racemes late in October. The roots of the *barajillo* are very large and penetrate deeply into the soil; the tubercles formed by the nitrogen-gathering bacteria are usually found only on the upper third of the root. All kinds of cattle are exceedingly fond of this plant; furthermore, it is capable of enduring prolonged drought and of thriving in very poor soil. (Adapted from *Revista de Agricultura Tropical, El Salvador, vol. 1, p. 65.*)

For illustrations of the *barajillo*, see Plates III and IV.

55447. MICROCITRUS INODORA (Baill.) Swingle. Rutaceæ. **Russell River lime.**
(*Citrus inodorus* Baill.)

From Brisbane, Queensland. Seeds presented by C. T. White, Botanic Museum and Herbarium, Botanic Gardens. Received May 25, 1922.

In general appearance the Russell River lime resembles the orange, having the same dark-green foliage. The very small white flowers are odorless, and the oval or oblong ribbed fruits are about 2½ inches long, with pulp having a sharp but agreeable flavor. This tree is native to the Bellenden Ker Mountain region of northern Queensland and is the only species of the genus which yields fruits of sufficiently good quality to be of promise for culture even without any improvement by cross-breeding or selection. (Adapted from *Swingle, Journal of the Washington Academy of Sciences, vol. 5, p. 577,* and from *Bailey, Report of the Government Expedition to Bellenden Ker Range, p. 34.*)

55448 to 55450. CERATONIA SILIQUA L. Cæsalpiniaceæ. **Carob.**

From Jerusalem, Palestine. Cuttings presented by I. Wilkanski, Jewish Agricultural Experiment Station. Received May 25, 1922. Quoted notes by Mr. Wilkanski.

55448. "*Habathi.* This is poorer in quality than the other two varieties, but gives a larger crop."

55449. "*Sandalawi.* This is the best variety as far as quality is concerned."

55450. "*Schehabi.* This is quite mediocre both in quality and yield."

55451 to 55453. GOSSYPIUM spp. Malvaceæ. **Cotton.**

From Bela Vista, Angola, Africa. Seeds presented by H. A. Neipp, American Mission. Received May 19, 1922. Quoted notes by Mr. Neipp.

55451. GOSSYPIUM sp.

"Collected in dry season at 5,400 feet altitude."

55452. GOSSYPIUM sp.

"Collected during the wet season at 5,400 feet altitude."

55453. GOSSYPIUM sp.

"Collected in Lobito, sea level."

ONE OF THE WHITE SAPOTES OF CENTRAL AMERICA. (CASIMIROA TETRAMERIA MILLSP.; S. P. I. No. 55445.)

The common white sapote (*Casimiroa edulis*) has been cultivated in California for many years. The species here shown, *C. tetrameria*, is of more recent introduction and has not yet become well known in this country. At Miami, Fla., it grows lustily and produces in great abundance its yellow-green fruits, whose pale yellow flesh is of very sweet flavor with a bitter tang. *Casimiroa tetrameria* can be distinguished from *C. edulis* by its more pubescent leaves. The fruits of the two species are almost identical in character. (Photographed by Edward Simmonds, Plant Introduction Garden, Miami, Fla., October, 1921; P27993FS.)

A RARE SPECIES OF WHITE SAPOTE. (CASIMIROA TETRAMERIA MILLSP.; S. P. I. No. 55445.)

When fully ripe, the fruits of this rare white sapote are very soft and delicate in texture and must be handled with care to avoid bruising. They are usually eaten out of the hand and are highly interesting because of the peculiar combination of sweet and bitter flavors which they possess. The tree can be grown in many parts of California and Florida. It resists severe frosts and requires less water than many other fruit trees. (Photographed by E. L. Crandall, Photographic Laboratory, May 24, 1921; P26849FS.)

THE BARAJILLO, A NEW LEGUMINOUS SHRUB FROM SALVADOR. (MEIBOMIA RENSONI PAINTER; S. P. I. No. 55446.)

The use of leguminous plants as green cover crops and soil builders is becoming universal. The one here shown, *Meibomia rensoni*, has recently been called to the attention of horticulturists by Dr. Carlos Renson, of San Salvador. Under favorable conditions of climate and soil it reaches 18 feet in height. Its purplish flowers are borne in terminal racemes. The large roots penetrate deeply into the soil. Like other leguminous plants, *M. rensoni* gathers nitrogen from the air and stores it in nodules upon the smaller roots. (Photographed by Dr. Carlos Renson, San Salvador, Salvador.)

YOUNG BRANCHES OF THE BARAJILLO. (MEIBOMIA RENSONI PAINTER; S. P. I. No. 55446.)

This new leguminous shrub from Salvador, in addition to serving as a green cover crop, is said to be an excellent forage for livestock. The plant thrives in poor soil and is said to resist drought admirably. It should be tried in tropical regions, where it may prove to be more valuable than the pigeon-pea, now used extensively as a cover crop and soil builder. (Photographed by Dr. Carlos Renson, San Salvador, Salvador.)

55454 and 55455. GARCINIA spp. Clusiaceæ.

From Santa Fe, Isle of Pines. Seeds presented by H. S. Jones. Received May 27, 1922.

Introduced for testing as a stock for the mangosteen (*Garcinia mangostana* L.).

55454. GARCINIA TINCTORIA (DC.) W. F. Wight. (*G. xanthochymus* Hook. f.)

A medium-sized tree, native to southern Asia, with smooth, bright-yellow, strongly acid fruits the size of an orange.

For previous introduction, see S. P. I. No. 47358.

55455. GARCINIA sp.

Fruits yellow, about 2 inches in diameter.

55456 to 55462. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Ibarra, Ecuador. Tubers presented by Sr. José Felix Tamayo. Received May 29, 1922.

"These varieties of *Chaucha* potatoes were grown near Ibarra, Ecuador. The *Chauchas* (Quichua, early) are a group of potatoes cultivated in the Ecuadorian highlands at altitudes between 8,000 and 12,000 feet. Commercially they are not very important, due to the fact that they do not keep as well as other varieties, but they are much cultivated for home use. The tubers are of good size; those of some varieties are of good quality, while others are rather inferior. The color, both of surface and flesh, is variable.

"The *Chauchas* mature in about five months from the time of planting, when cultivated at an elevation of 12,000 feet; other varieties require seven to eight months. As soon as the plants come into bloom the tubers are considered to be mature and are dug for eating. Unlike other varieties, which must be dug and then stored for a period before resowing, the *Chauchas* can be resown immediately after digging. The yield is fairly heavy, but not as great as that of some of the late-maturing varieties." (*Wilson Popenoe.*)

55456. (No. 1.)
55457. (No. 2.)
55458. (No. 3.)
55459. (No. 4.)
55460. (No. 5.)
55461. (No. 6.)
55462. (No. 7.)

55463. CUCURBITA PEPO L. Cucurbitaceæ. Squash.

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received May 31, 1922.

Introduced in connection with experiments to determine the specific identity of our cultivated pumpkins and squashes.

Courge de Mirepoix. (Mirepoix Musk squash.) A variety cultivated in southern France, with a strong trailing stem, large erect leaves with rounded lobes, and pear-shaped, slightly ribbed fruits which are dark green, streaked with light green. The flesh is dark red, firm, and fragrant. (Adapted from *Robinson, The Vegetable Garden, p. 327.*)

55464. CERATONIA SILIQUA L. Cæsalpiniaceæ. Carob.

From Chaseki, Athens, Greece. Presented by P. O. Anagnostopoulos, director, Horticultural Station. Received May 27, 1922.

Cuttings of a variety of carob, grown near Athens, Greece. Obtained at the request of Dr. J. Eliot Coit, of Los Angeles, who has been in correspondence with Mr. Anagnostopoulos, and who believes that the variety may be a superior one for cultivation in California, where the carob is receiving serious attention.

55465. ONCOBA ECHINATA Oliver. Flacourtiaceæ. **Gorli.**

From Sierra Leone, Africa. Purchased from L. A. King-Church, conservator of forests, Freetown, Sierra Leone. Received June 1, 1922.

"The commercial sources of chaulmoogra oil and some closely related products which yield chaulmoogric and hydnocarpic acids have always been and still are the seeds of forest trees (*Taraktogenos kurzii, Hydnocarpus anthelminthica*, and *H. wightiana*, and possibly others) growing in the rain-forest regions of British India and Siam. It has, however, been observed by Goulding and Akers that the seeds of a West African shrub, *Oncoba echinata*, yield an oil which contains a large proportion of chaulmoogric acid.

"Through the explorations of J. F. Rock, of this office, seeds of the forest trees (*Taraktogenos kurzii, Hydnocarpus anthelminthica, H. wightiana*, and *H. castanea*) have been secured and plants obtained from them are now being grown in various countries. Inasmuch as these are all tall trees, considerable time would doubtless be required for the production of fruit. On account of this fact a search has been made for more rapidly maturing plants which yield chaulmoogric acid, and through the kindness of L. A. King-Church, conservator of forests of Sierra Leone, a considerable quantity of seeds of the *gorli* shrub (*Oncoba echinata*) has been secured.

"Since the investigations of Goulding and Akers (see Proceedings of the Chemical Society of London, vol. 29, No. 417, p. 197) of the Imperial Institute, have established the fact that *gorli* seeds yield 45.6 per cent of fat and that the mixed fatty acids obtained from this consist to the extent of 87.5 per cent of chaulmoogric acid, the importance of making an attempt to get the plant and cultivating it was pointed out by Dr. Frederick B. Power in his chapter in Mr. Rock's bulletin entitled: 'The Chaulmoogra Tree and Some Related Species,' p. 8 (U. S. Department of Agriculture Bulletin No. 1057).

"From the literature relating to the genus Oncoba it appears that it is composed of shrubs or small trees; that there are several species, all of them African, and that they bear fruits of considerable size. *Oncoba echinata*, for example, has fruits remembling in size and shape an unopened chestnut bur. That these shrubs are precocious is indicated by the fact that one species, *Oncoba routledgii*, flowered in England two years from seed. This won a certificate from the horticultural society on account of the conspicuous beauty of its large white flowers, which are 2 or 3 inches in diameter.

"Whether *Oncoba echinata* is especially particular as to its soil requirements remains to be determined, but, judging from the experience which we have had with other trees and shrubs from Natal and other portions of Africa, there would seem to be a fair chance that it might thrive even on the limestone soils of southern Florida." (*David Fairchild.*)

55466 and 55467. AVENA SATIVA L. Poaceæ. **Oats.**

From Cambridge, England. Seeds presented by Prof. R. H. Biffen, Cambridge School of Agriculture. Received May 24, 1922.

These two new hybrid varieties of *white winter* oats were originated at the Plant-Breeding Institute, Cambridge, England, and are introduced for the use of oat breeders in this country.

55466. *A. 69.* 55467. *A. 147.*

55468 and 55469.

From Oxkutzcab, Yucatan, Mexico. Seeds presented by Sr. Moises Vasquez Vega. Received May 29, 1922.

55468. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"The fruits are very large, weighing from 17 to 22 pounds." (*Vega.*)

For previous introduction, see S. P. I. No. 52620.

55469. JACARATIA MEXICANA A. DC. Papayaceæ.

A relative of the papaya (*Carica papaya* L.), introduced for breeding experiments.

"A tree with a smooth, tapering trunk and many slender branches. The leaves are palmately seven parted and the fruits, about 6 inches

55468 and 55469—Continued.

long, are five winged, each wing terminating in an incurved spur at the base. These sweetish edible fruits are preserved with sugar. The tree is commonly called *bonete* or *papaya silvestre* and occurs in Yucatan and Chiapas, Mexico, and other parts of tropical America." (*W. E. Safford.*)

55470. AMYGDALUS PERSICA × COMMUNIS. Amygdalaceæ. **Peach-almond hybrid.**

From Mexico, D. F., Mexico. Seeds presented by Prof. Juan Balme. Received June 1, 1922.

The peachmond, a supposed peach-almond hybrid, interesting to those engaged in breeding stone fruits.

55471. CHENOPODIUM QUINOA Willd. Chenopodiaceæ. **Quinoa.**

From Cuzco, Peru. Seeds presented by Dr. Alber A. Giesecke, Cuzco University. Received June 1, 1922.

For previous introduction and description, see S. P. I. No. 55051.

55472 to 55475. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

From Valencia, Spain. Seeds presented by Henry C. A. Damm, American consul. Received June 10, 1922.

55472. *Paprika* No. 1.

55473. *Paprika* No. 2.

55474. *Pimiento largo dulce de España.*

55475. *Pimiento Morron.*

For previous introduction, see S. P. I. No. 32370.

55476. PRUNUS MAJESTICA Koehne. Amygdalaeæ. **Cherry.**

From Kingtungting, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received June 2, 1922.

"(No. 2967. Manoh, Yunnan. March 30, 1922.) A large, handsome tree, 40 to 50 feet in height, with large green leaves and oblong, bright-red, bitter, fleshy fruits. It grows at altitudes of 6,000 feet on ridges with *Pyrus yunnanensis* and is very drought resistant, enduring drought for seven months or more. Also it can withstand the intense heat of April and the freezing temperatures of winter. It is a prolific bearer, but is useful only as a stock plant and as an ornamental." (*Rock.*)

55477. NAGEIA NAGI (Thunb.) Kuntze. Taxaceæ.
(*Podocarpus nagi* Pilger.)

From Okitsu, Shizuokaken, Japan. Seeds presented by T. Onda, director, Government Horticultural Experiment Station. Received June 2, 1922.

An evergreen subtropical tree 30 to 60 feet high, with very narrow, bluish green, sharp-pointed leaves about 3 inches long arranged in two rows on the branches. The fruit is a small, fleshy, purplish black drupe which emits a balsamlike fragrance when cut. In Japan, where this tree is native, the white, fine-grained wood is used for furniture and general building. Propagation is easily carried on by seeds, of which the tree produces an abundance. (Adapted from *Useful Plants of Japan, Agricultural Society, Tokyo, p. 145,* and *Revue Horticole, vol. 86, p. 77.*)

55478. SALPICHROA RHOMBOIDEA (Gill. and Hook.) Miers. Solanaceæ.

From Buenos Aires, Argentina. Seeds presented by Sr. Benito Carrasco, director, Botanic Garden. Received June 2, 1922.

Introduced for use in tomato-breeding experiments.

An ornamental relative of the tomato, with white flowers and edible, white, transparent berries which resemble the pineapple in flavor. Because of its attractive appearance and creeping habit it is very effective for covering bare places. (Adapted from *The Garden, vol. 35, p. 367.*)

55479. AVENA NUDA Hoejer. Poaceæ. **Naked oats.**

From Min Hsien, Kansu, China. Seeds presented by William H. Ruhl. Received June 2, 1922.

"This is the variety of huskless oats grown in the Province of Kansu." (*Ruhl.*)

55480. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Sydney, New South Wales. Presented by George Valder, undersecretary and director, New South Wales Department of Agriculture. Received June 12, 1922.

Locally grown timothy seed introduced for cultural and comparison experiments.

55481. HIBISCUS CANNABINUS L. Malvaceæ.

From Pusa, Bengal, India. Seeds presented by A. Howard, Imperial economic botanist, through Robert S. Finlow, fiber expert to the Government of Bengal. Received June 3, 1922.

Introduced for trial as a fiber-producing plant.

A prickly stemmed plant 6 to 8 feet in height, cultivated throughout India for its fiber, which is used as a substitute for hemp. The fiber is soft, white, and silky and is considered by some authorities to be more durable than jute for coarse textiles. (Adapted from *C. R. Dodge, Useful Fiber Plants of the World, p. 192.*)

55482. DIOSCOREA CAYENENSIS Lam. Dioscoreaceæ.

From Guantanamo, Cuba. Tuber collected at Baltimore, Md., by C. E. Prince, inspector, Federal Horticultural Board. Received June 3, 1922.

"A yellow-fleshed yam having a somewhat bitter taste, but otherwise of very good quality. The vine is dark green and thorny." (*R. A. Young.*)

55483. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

From Naples, Italy. Seeds presented by the Italian School of Agriculture at Portici, through Homer M. Byington, American consul. Received June 3, 1922.

"*King Humbert.* This belongs to the group of tomatoes used by the Italians for making tomato paste. The fruits are pear shaped. The vine is very vigorous and quite productive." (*D. N. Shoemaker.*)

Introduced for the use of specialists in tomato breeding.

55484. JUNIPERUS PROCERA Hochst. Pinaceæ. **East African cedar.**

From Jamaica Plain, Mass. Seeds presented by Prof. C. S. Sargent, Arnold Arboretum, Harvard University. Received June 3, 1922.

"This is probably the largest and handsomest juniper in the world. It is a native of the high mountains of eastern tropical Africa and should prove an extremely valuable tree in the mountains of the West Indies; it may grow in the southern United States." (*Sargent.*)

55485. ZIZIPHUS MAURITIANA Lam. Rhamnaceæ. **Indian jujube.**
(*Z. jujuba* Lam., not Mill.)

From Assam, India. Seeds presented by S. K. Mitra, economic botanist. Received June 5, 1922.

The Indian jujube is cultivated chiefly for its fruit, which varies in shape from more or less spherical in the wild or commoner kinds to oval or oblong in the cultivated kinds. The pulp is mealy and pleasantly sweetish; some of the cultivated varieties are very fine. The tree is found throughout India. (Adapted from *Brandis, Forest Flora of India, p. 88.*)

For previous introduction, see S. P. I. No. 41443.

For an illustration of this jujube, see Plate V.

55486. ACANTHOSICYOS HORRIDA Welw. Cucurbitaceæ.

From Pretoria, Union of South Africa. Seeds presented by Dr. I. B. Pole Evans, through Dr. H. L. Shantz, physiologist in charge of the Office of Plant Physiological and Fermentation Investigations. Received June 5, 1922.

"*Narras.* A remarkable cucurbitaceous plant which grows on the dunes of the Namib, where subterranean waters exist. Even when this water is at great depths this plant subsists. It forms thorny thickets on the sand hills of Southwest Africa and is adapted to a hot, dry climate, with little or no rainfall. The fruit is the size of an ostrich egg. Both the pulp and seeds are used as food by the natives. The fruits are produced in abundance, and for about four months of the year the more primitive Hottentots are said to survive with practically no other source of food or water. The fruits are eaten and water is secured from them. The seeds when ripe are plump and about the size of watermelon seeds.

"The plant is one which should be of great value to our Indians of the Southwest if once established on the sand dunes of Arizona and southern California. It is doubtful if any plant can be secured which seems offhand to give greater promise in that region than does this cucurbit." (*Shantz.*)

For previous introduction, see S. P. I. No. 31401.

55487. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Santa Ines, Chile. Plants presented by Sr. Salvador Izquierdo, Santiago, Chile. Received June 12, 1922.

"*Pomona Improved.* Sr. Izquierdo writes that this is an improved form of the variety Pomona, grown at his nursery at Santa Ines. Preserved fruits which he has sent us to show the character of the variety indicate that it is a fruit of unusually large size, deep yellow, clingstone, and of excellent quality for canning. It should be tried in California, where it may prove to have real value. Its season of ripening is not known." (*Wilson Popenoe.*)

55488. MEDICAGO SATIVA L. Fabaceæ.

From Loja, Ecuador. Seeds presented by Sr. Enrique Witt. Received June 15, 1922.

Locally grown seed introduced for experiments in alfalfa breeding.

55489. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. **Yerba maté.**

From Buenos Aires, Argentina. Presented by D. S. Bullock, agricultural commissioner, Bureau of Markets and Crop Estimates, United States Department of Agriculture. Received June 5, 1922.

"These seeds were harvested in April in the Territory of Misiones." (*Bullock.*)

A small, bushy, evergreen tree with serrate alternate leaves, native to Brazil and Paraguay and the neighboring countries. The leaves are roasted and ground to make the Paraguay tea of commerce, which is said to possess the good properties of tea and coffee without their injurious after effects.

For previous introduction, see S. P. I. No. 47309.

55490 and 55491. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. **Lentil.**
(*Lens esculenta* Moench.)

From Malaga, Spain. Seeds presented by Sr. Luis Liro Ortiz, Ingeniero de la Sección Agronómica Málaga, through Gaston Smith, American consul. Received June 12, 1922.

55490. From Arevalo, Province of Avila.

55491. From the Province of Salamanca.

55492. DIOSCOREA ALATA L. Dioscoreaceæ. **Greater yam.**

From the Bahama Islands. Tuber collected at New York by Federal Horticultural Board inspectors. Received June 8, 1922.

"Tuber of an unidentified variety of the greater yam for testing in Florida and the Gulf region. The vine is four angled and prominently winged, with the margins of the wings purplish. The central part of the young leaf has purplish shading between the veins." (*R. A. Young.*)

55493. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. **Yerba maté.**

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received June 7, 1922.

For previous introduction and description, see S. P. I. No. 55489.

55494. RUMEX TUBEROSUS L. Polygonaceæ. **Sorrel.**

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received June 2, 1922.

"A very good sorrel from the Atlas region of Algeria." (*Trabut.*)

"The leaves are often used as a vegetable." (*Dragendorff, Die Heilpflanzen, p. 190.*)

55495. SEVERINIA BUXIFOLIA (Poir.) Ten. Rutaceæ.
(*Atalantia buxifolia* Oliver.)

From Buitenzorg, Java. Seeds presented by the director of the Botanic Garden. Received June 5, 1922.

A much-branched thorny shrub which is not uncommon in southern China and French Indo-China; it has oval, shiny green leaves, axillary clusters of small white flowers, and small berrylike fruits which become very dark red or nearly black. In Louisiana this handsome shrub has proved useful for hedges, especially the forms which have thorns 2 or 3 inches long; furthermore, it is easily propagated from cuttings. Experiments have shown that Severinia can withstand unusually large amounts of salt in the soil, and it may prove of interest for citrus fruits in regions having alkali in the soil or salty irrigation water. (Adapted from *Swingle, Journal of the Washington Academy of Sciences, vol. 6, p. 651.*)

55496. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Peradeniya, Ceylon. Plants presented by Dr. F. A. Stockdale, Director of Agriculture for Ceylon, through Mrs. Arthur Curtis James. Received June 5, 1922.

"In the hope of establishing the mangosteen in our tropical dependencies, many importations of seeds and plants have been made during the last 20 years. Indeed, the office has made it a point never to miss an opportunity to secure new stock, whether in the form of a shipment of seeds by parcel post or a wardian case of young plants which some traveler returning from the East has generously volunteered to bring home. This lot of plants which Mrs. Arthur Curtis James secured from the Botanic Garden at Peradeniya, Ceylon, and which she has carefully brought with her on the deck of the yacht *Aloha*, was presented by Dr. F. A. Stockdale, Director of Agriculture for Ceylon." (*Wilson Popenoe.*)

For description of the mangosteen, see S. P. I. No. 51465.

A JUJUBE FOR MOIST TROPICAL REGIONS. (ZIZIPHUS MAURITIANA LAM.; S. P. I. No. 55485.)

The Chinese jujube (*Ziziphus jujuba*) is being cultivated with great success in California and the Southwestern States. It is not successful, however, in southern Florida or in humid tropical regions generally. *Ziziphus mauritiana*, on the other hand, grows and fruits well at the Plant Introduction Garden, Miami, Fla., and will probably be suitable for cultivation in Porto Rico, Hawaii, and the Philippines. It is a small tree of attractive appearance, and its greenish yellow fruits, here illustrated in natural size, when stewed are scarcely distinguishable from the best northern plums. (Photographed by E. L. Crandall, Photographic Laboratory, February 7, 1922; P27245FS.)

BARBADOS RED, A GOOD VARIETY OF TROPICAL YAM. (DIOSCOREA ALATA L.; S. P. I. No. 55561.)

This is a horticultural form of *Dioscorea alata*, technically known as the greater yam. It is widely grown in the West Indies and is closely related to the Dago haya, or Guam yam. It is, however, better than the latter in some respects. The tuber has a purple inner skin, and the firm flesh, mealy when cooked, is purplish and of good flavor. The yam replaces the potato in certain tropical regions and in its best varieties is fully equal to the latter; indeed, good yams properly cooked can hardly be distinguished from potatoes. (Photographed, natural size, by E. L. Crandall, Photographic Laboratory, June 23, 1922; P27585FS.)

55497 to 55499.

From Talifu, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received June 18, 1922. Quoted notes by Mr. Rock.

55497. PYRUS sp. Malaceæ. Pear.

"(Talifu, Yunnan. April 18, 1922.) An edible pear about the size of a large apple; the flesh is light yellow, and the skin is thin, firm, and light citron colored with a red hue, hence the name *Wu pa li*, 'touched-by-the-fire' pear. The tree grows on the side of the lake opposite to Talifu."

55498. PRUNUS MAJESTICA Koehne. Amygdalaceæ. Cherry.

"(No. 3066. Near Chukai, Yunnan. April 5, 1922.) A lovely tree with large serrate leaves; the branches were bent with their load of large, oblong, deep-red, cherrylike fruits. It is early fruiting, the fruits appearing in late February or early in March, and the tree seems to be absolutely free from insect or fungous pests. It occurs throughout the Black River Valley at altitudes of about 5,000 feet on mountain slopes, also near Szemao, where it is rare, and more commonly near Nanchien. The Chinese name is *Yin to* or *Yin tao*."

55499. RUBUS ELLIPTICUS J. E. Smith. Rosaceæ. Raspberry.
(*R. flavus* Buch.-Ham.)

"(Nanchien, Yunnan. April 8, 1922.) A very stout shrub which, especially when young, is densely covered with long, red, almost hairlike spines. The flowers are white, and the deep-yellow, almost orange, very juicy acid fruits are collected by the hill tribes and brought to the markets; the fruits ripen earlier on the mountains than in the valley. The shrub is found at altitudes of 6,000 to 7,000 feet all the way up to Talifu; it grows on the high hills near Szemao, and I also came across it in Kengtung."

55500 and 55501.

From Nanchien, Yunnan, China. Cuttings collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received June 13, 1922. Quoted notes by Mr. Rock.

55500. PRUNUS MAJESTICA Koehne. Amygdalaceæ. Cherry.

"(Szemao, Yunnan, March 18, 1922.) These seeds were sent to me at Talifu from the mountains near Szemao; they are said to be from the first wild edible cherries which came to the market."

55501. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

"(Nanchien, Yunnan. April 27, 1922.) The cane is erect, tall, of a uniform reddish yellow color, and very juicy and sweet. It is cultivated throughout the central portion of Yunnan, south of Mengwa, and also near Puerhfu, in southern Yunnan; it is grown at an altitude of 5,000 to 6,000 feet and even higher. The region is very dry, and arid mountains form the slopes of the valleys."

55502. TRIFOLIUM PRATENSE L. Fabaceæ. Red clover.

From Valence sur Rhone, France. Seeds purchased from Tezier Frères. Received June 17, 1922.

Medium red clover seed introduced for comparison and cultural experiments.

"This seed is from the 1921 harvest and was grown about 8 kilometers (about 5 miles) east of Valence." (*Tezier Frères.*)

55503. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. Tomato.

From Buenos Aires, Argentina. Seeds presented by D. S. Bullock, agricultural commissioner, Bureau of Markets and Crop Estimates, United States Department of Agriculture. Received June 15, 1922.

Perfección. Introduced for the use of specialists of this bureau who are engaged in tomato-breeding experiments.

55504. TELFAIRIA PEDATA (J. E. Smith) Hook. Cucurbitaceæ. **Koume vine.**

From Nairobi, Kenia, Africa. Seeds presented by A. Holm, director, Department of Agriculture. Received June 6, 1922.

"A perennial climber, indigenous to eastern Africa, which grows very luxuriantly in this colony. The kernels of the seeds are used by the natives both as a foodstuff and as a source of edible oil.

"The following analysis of the seeds has been published by Gilbert (see Sadebeck, Die Kulturgewächse der Deutschen Kolonien und Ihre Erzeugnisse, Jena, 1899, p. 245):

	Per cent.
Moisture	6.54
Ash	2.04
Oil	36.02
Protein	19.63
Woody fiber	7.30
Nitrogen-free extractive matter	28.45

"These seeds are flat, irregularly circular in shape, and about 1¼ to 1½ inches in diameter. The single seeds average 4.9 grams in weight.

"The Imperial Institute of London has reported as follows:

"'The seeds consist approximately of fibrous husk 11 per cent, shell 38 per cent, and kernel 51 per cent.'

"The kernel yields 56.9 per cent of slightly reddish brown oil.

"The oil from seeds from Zanzibar gave the following analysis:

Specific gravity at 15° C	0.919
Acid value	2.6
Saponification	196
Iodin value	89

"This is a nondrying oil and has a pleasant, slightly sweet taste. It would be suitable for soap manufacture and also as an edible oil. The seed is used by Europeans in this colony both as a nut and as a flavoring for cakes.

"The reason that these seeds are not more used is due to the hardness of the shell and the difficulty of removing it, as well as to the intensely bitter, green skin which separates the kernel from the shell. If a method could be found of removing the tough fibrous husks and this bitter skin, it would appear that the seed would be of considerable commercial value, both for its edible oil and for the manufacture of soap, as well as for the resultant oil cake, which would probably make a good cattle feed. It would be impossible, however, to use the cake after pressing the unhusked seeds, on account of the skin mentioned above.

"A German syndicate of soap and candle manufacturers at Mannheim has investigated the possibilities of these seeds, but expressed the opinion that it would be inadvisable to place consignments of the seeds on the European market until a machine had been invented for rapidly and cheaply shelling them.

"These seeds grow very rapidly in any place which is not touched by frost. The pod containing the seeds is about a foot in diameter when ripe. The vine climbs over neighboring trees and requires no care." (*S. W. Eels, American consul, Nairobi, Kenia.*)

For previous introduction, see S. P. I. No. 52450.

55505 to 55508. RUBUS spp. Rosaceæ. **Raspberry.**

From Slough, England. Plants purchased from Charles Turner, The Royal Nurseries. Received June 2, 1922.

55505. RUBUS sp.

Carter's Prolific. A moderately vigorous variety with spiny canes about 3 feet high and very small leaves; it is a good cropper, and the berries are medium sized, deep red, and nearly round, firm, and of good flavor. (Adapted from *Journal of the Royal Horticultural Society, vol. 47, p. 47.*)

55506. RUBUS sp.

"*Northumberland Fillbasket.* Large, deep-red fruits of good flavor." (*Dicksons's 1921–22 Catalogue.*)

55505 to 55508—Continued.

55507. RUBUS sp.

"*Perfection.* Very stout bright-crimson canes and large bright-red fruits of excellent flavor. A vigorous grower, thriving on light soils." (*George Bunyard's Catalogue.*)

55508. RUBUS sp.

"*The Guinea.* A new yellow variety of great excellence." (*Charles Turner's Catalogue.*)

For previous introduction, see S. P. I. No. 41976.

55509. PERSEA AMERICANA Mill. Lauraceæ. Avocado.

(*P. gratissima* Gaertn. f.)

Seedling now growing at the Plant Introduction Garden, Miami, Fla.

"*Collinson.* This is a seedling of the Collins Guatemalan avocado (S. P. I. No. 19080); it was planted at the new garden in 1915, endured well the frost of February, 1917, when the temperature went to 26° F., before a good crop of fruit in 1920 and 1921, and at this date (March 7, 1922) still has fruit on the tree. The tree is upright in habit, with large leaves which do not burn in the summer. This year the fruits are of better quality than before, the average weight being about 1¼ pounds; color, green; seed, tight in the cavity; flavor, good." (*Edward Simmonds.*)

55510 to 55515. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Sydney, New South Wales. Tubers presented by George Valder, undersecretary and director, New South Wales Department of Agriculture, through W. D. Kerle, Inspector of Agriculture. Received June 17, 1922.

These are old varieties of American origin which are being cultivated in New South Wales. They have been reintroduced from New South Wales for special studies by potato experts. William Stuart, of the Bureau of Plant Industry, has furnished the descriptive notes from old American catalogues.

55510. *Adirondack.* This variety is a hybrid with *White Peachblow.* It is distinguished from the latter in its upright habit and larger bright-green leaves. The red-skinned, almost perfectly spherical tubers are much clustered; the flesh is pure white. (Adapted from *Potato Catalogue of B. K. Bliss & Sons, 1881, p. 5.*)

55511. *Brownell's Beauty.* The foliage is deep green and very healthy; the tubers grow compactly in the hill and are easily dug, ripening in about three months from the time of planting. The tubers are medium to large, oval or somewhat flattened with the eyes few and nearly even with the surface; the skin is reddish or deep-flesh color; the flesh is white, fine-grained, and very delicate. For the table, when baked or boiled, they are equal to the best. (Adapted from *Potato Catalogue of R. K. Bliss & Sons, 1874, p. 4.*)

55512. "*Carmen No. 1.* (Synonym *Rural New York No. 1.*) This is a seedling from seedlings raised through several generations. It belongs to the Green Mountain group. The vines are large, strong, healthy, and well branched. The flowers are white and abundant, but rarely producing seeds. The abundant tubers are large, broadly roundish, with rather shallow eyes, creamy white skin, and white flesh of very fine quality." (*Stuart.*)

55513. *Manhattan.*

55514. *Manhattan Black.* This is a main-crop variety and may be called "Improved Compton's Surprise." The vines are vigorous, with dark-green foliage; the tubers are nearly round, with dark-purple skin and very solid white flesh of fine grain; in size medium to large. (Adapted from *Potato Catalogue of B. K. Bliss & Sons, 1880, p. 18.*)

55510 to 55515—Continued.

55515. *Queen of the Valley.* The vines are large and unusually vigorous, resisting disease well; the leaves are large, thick, and dark green. The very large tubers are long-flattened, but because of their large size are less suitable for table use than for feeding livestock. (Adapted from *Potato Catalogue of B. K. Bliss & Sons, 1881, p. 9.*)

55516. Fragaria sp. Rosaceæ. Strawberry.

From Irapuato, Guanajuato, Mexico. Plants sent by Juan Lopez Comaremy, Irapuato, at the request of Arthur Stockdale, Mexico City. Received June 20, 1922.

For previous introduction and description, see S. P. I. No. 54976.

55517 to 55519. Medicago sativa L. Fabaceæ. Alfalfa.

From Lima, Peru. Seeds presented by Dr. W. E. Dunn, acting commercial attaché. Received May 10, 1922.

Peruvian alfalfa has proved of great value in certain parts of the United States. In the hope of securing new strains which may be superior in certain respects to any now grown in the United States, an effort is being made to obtain seed from as many different regions in Peru as possible. The following note is taken from H. L. Westover, The Development of the Peruvian Alfalfa Industry in the United States, Department Circular 93:

"As compared with common alfalfa, both the Peruvian and 'smooth Peruvian' alfalfas are more upright, less branched, and have fewer and somewhat coarser stems and smaller crowns. In thick stands, these differences are hardly noticeable. Most of the Peruvian introductions are also characterized by rapid growth, quick recovery after cutting, and in sections having a mild climate ability to make growth in cool weather after ordinary alfalfas have ceased growing. Under such conditions the former starts growth earlier in the spring and continues later in the fall, thereby giving more cuttings each season. The principal objection advanced in times past to these alfalfas is their tendency to become somewhat woody when allowed to stand beyond the flowering stage, but this difficulty is easily obviated by harvesting earlier.

"Lack of hardiness will always confine the successful production of the true and smooth Peruvian alfalfas to the southern and southwestern portions of the United States, where the climatic conditions are comparatively mild. They can not be grown to advantage where the winter temperature falls below 10° F.

"At the present time most of the Peruvian and smooth Peruvian alfalfa in the United States is found in Arizona and California. It has also been grown to a limited extent in New Mexico, Texas, and the coastal regions of the Southeastern States. The results secured seem to indicate that in much of this region the common alfalfa could be replaced very profitably by Peruvian alfalfa."

55517. *Monsefu Norte.*

55518. *Quebrada de Tangas.*

55519. *Sierra Alta.*

55520 to 55547.

From Ariana, near Tunis, Africa. Seeds presented by F. Boeuf, chief, Botanical Service of Tunis. Received May 31, 1922.

55520 to 55524. Avena sterilis L. Poaceæ. Oats.

55520. *Crème.*

55521. *Grise.*

55522. *Hybride.*

55523. *Noire.*

55524. *Rousse.*

55525 to 55527. Hordeum vulgare pallidum Seringe. Poaceæ. Barley.

55525. *Fourragère.*

55526. *Commune A.*

55527. *Commune J.*

55520 to 55547—Continued.

55528. LOLIUM MULTIFLORUM Lam. Poaceæ. Italian rye-grass.

"Italian rye-grass is used to a limited extent for meadow, pasture, and lawn and in the South is of some importance for winter forage" (*A. S. Hitchcock.*)

55529 to 55546. TRITICUM DURUM Desf. Poaceæ. Durum wheat.

55529. *Adjini.*
55530. *Agili.*
55531. *Agiliblanc* (No. 1).
55532. *Agiliblanc* (No. 2).
55533. *Aouedj.*
55534. *Derbessi.*
55535. *Biskri.*
55536. *Hamira.*
55537. *Jenah Rhetifah.*
55538. *Mahmoudi AC* 3.
55539. *Mahoudi AP* 5.
55540. *Medea.*
55541. *Mekki* 1.
55542. *Mekki* 2.
55543. *Souri AC* 60.
55544. *Souri AP* 5.
55545. *Sbei* 1.
55546. *Sbei* 2.

55547. VICIA MICHAUXII Spreng. Fabaceæ. Vetch.

Introduced for trial as green manure and as a forage plant.

A creeping or climbing annual vetch, native to Syria, with very narrow leaflets, light-yellow flowers, and hairy pods about an inch long. (Adapted from *Post, Flora of Syria, Palestine, and Sinai, p. 288.*)

55548. ORNITHOPUS SATIVUS Brot. Fabaceæ. Serradella.

From Hamburg, Germany. Seeds purchased from Ernst & Von Spreckelsen. Received June 20, 1922.

Introduced for testing as a winter forage crop in the South.

For previous introduction, see S. P. I. No. 39345.

55549. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Eastwood, New South Wales. Plants purchased from C. E. Vessey, Mount Tomah Nurseries, through H. R. Wright, Avondale, Auckland, New Zealand. Received June 20, 1922.

"*Goodman's Choice.* We have sent out a number of letters to friends who are in a position to know the behavior of this peach and its comparison with *Phillips Cling.* So far we have only two replies, one from Mr. Goodman, who states that this is easily the best-quality canning peach the canners have ever seen, and that growers in this State (Victoria) are putting in more acres of it than all other yellow clings put together.

"His catalogue description, quoted below, shows that it ripens about six weeks later than *Tuscan Cling:*

"'Undoubtedly the greatest yellow-fleshed clingstone peach introduced for many years. The tree is a heavy bearer each season of medium-sized fruit that is admirable for canning. The skin has a red blush on the sunny side; the flesh is beautifully rich and translucent; the variety is remarkable for even crops and gradual ripening, which means so much when the picking campaign is in progress. The fruit ripens toward the end of February and, as the name indicates, represents my choice for canning.'

"We know the behavior of the clings generally in this State, and we find that they have a great tendency to be uneven in shape. Our own nurseyman states that *Goodman's Choice* is one of the best late peaches that he has come across, but as we have no growers for canneries around there we can not give an authoritative report from that point of view ourselves." (*Herbert J. Rumsey, Dundas, New South Wales.*)

55550. PYRUS sp. Malaceæ. **Pear.**

From Talifu, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received June 27, 1922.

"(Talifu, May 4, 1922.) Seeds of a domesticated pear, from Haitung, on Lake Erh Hai, about 10 miles from Talifu." (*Rock.*)

55551. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. **Barley.**

From Valparaiso, Chile. Seeds purchased from S. Reid Thompson, American vice consul in charge. Received June 20, 1922.

"In Chile *Forjara* barley is cut twice for hay, and after that a third crop gives a good yield of grain. If this barley would give similar results in Oregon it would be of very great value." (*F. C. Reimer, Oregon Agricultural College Experiment Station.*)

55552 and 55553.

From Buitenzorg, Java. Seeds presented by the director, Botanic Garden, Buitenzorg. Received June 23, 1922.

55552. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

55553. RHEEDIA EDULIS (Seem.) Planch. and Triana. Clusiaceæ.

"This is occasionally cultivated in Brazil under the name of *limão do matto* (wild lemon); it is a small, handsome tree with oblong glossy green leaves and elliptic yellow fruits 2 inches long. The white pulp is highly acid." (*Wilson Popenoe.*)

55554 and 55555.

From Barberton, Transvaal. Seeds presented by George Thorncroft. Received June 26, 1922.

55554. ANNONA SENEGALENSIS Pers. Annonaceæ.

A shrub or small tree, sometimes 20 feet in height, native to both eastern and western tropical Africa. The oval, blue-green leathery leaves are up to 5 inches in length, and the orange-yellow fruits, over an inch in diameter, contain an aromatic dark-red pulp which suggests that of the cherimoya of tropical America. (Adapted from *Schweinfurth, The Heart of Africa, p. 222*, and from *Oliver, Flora of Tropical Africa, vol. 1, p. 16.*)

For previous introduction, see S. P. I. No. 49843.

55555. BOLUSANTHUS SPECIOSUS (Bolus) Harms. Fabaceæ.
(*Lonchocarpus speciosus* Bolus.)

A small, ornamental, leguminous tree from southeastern and southern Africa, with compound deciduous leaves and long racemes of violet flowers which have given the name "Rhodesian wistaria" to the tree in some districts. The hard, white, durable timber is used only for wheel spokes. The tree is subtropical in its requirements, grows best in good deep soil, and is propagated only by seeds. (Adapted from *The Garden, vol. 78, p. 64.*)

For previous introduction, see S. P. I. No. 21808.

55556. TRITICUM DURUM Desf. Poaceæ. **Durum wheat.**

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received June 23, 1922.

"(June 3, 1922.) Red wheat from Tlemcen, Algeria." (*Trabut.*)

55557 and 55558. Solanum tuberosum L. Solanaceæ. Potato.

From Ibarra, Ecuador. Presented by Sr. Jose Felix Tamayo. Received June 27, 1922. Quoted notes by Wilson Popenoe.

Seeds of the following potatoes, obtained for the use of plant breeders. Tubers of these varieties have been previously introduced; see S. P. I. Nos. 53190 and 53193.

55557. "*Cueruda blanca* (white cueruda) potato, 1921 crop, from the hacienda La Rinconada, in the Province of Carchi, where it is cultivated at altitudes between 11,000 and 12,000 feet.

"This is the most important commercial potato of Carchi Province. At Ibarra, where it is one of the favorite varieties on the market, it is known as *pastuza*. It yields heavily, and the whitish brown, somewhat flattened, oval tubers are of good size and quality. The eyes are very shallow and not numerous."

For previous introduction, see S. P. I. No. 53193.

55558. "*Cueruda morada* (purple cueruda) potato, 1921 crop, from the hacienda La Rinconada, Province of Carchi, where it is cultivated at altitudes between 11,000 and 12,000 feet.

"Commercially one of the best and most important varieties in northern Ecuador, though it is not quite so extensively grown as *cueruda blanca*. The tubers are oval, flattened, purple in color, with whitish areas around the shallow eyes; they possess excellent keeping qualities."

For previous introduction, see S. P. I. No. 53190.

55559 to 55562. Dioscorea alata L. Dioscoreaceæ. Greater yam.

From Montserrat, British West Indies. Tubers presented by W. Robson, curator, Agricultural Experiment Station. Received June 21, 1922. Quoted notes by R. A. Young.

55559. "*West White*. This is a white-fleshed yam, firm but mealy when cooked, and of good flavor. The vine is green, with narrow reddish wings at the four angles. Leaves long-ovate, cordate, acuminate; sinus fairly wide, but deep."

55560. "*West Red*. The inner skin of this yam is deep purple, and the flesh is purplish, mottled with deeper purple; it is mealy when cooked, but rather lacking in flavor. The wings on the vine are prominent and maroon colored. Leaves opposite, broadly ovate, cordate, acuminate; veins maroon; sinus deep and narrow; petiole maroon at base and apex."

55561. "*Barbados Red*. The inner skin is purple, and the flesh is light purple with scattered fibers of deeper purple. The flesh is rather firm, but mealy when cooked and of very good flavor. The vine has prominent maroon wings at the angles. Leaves opposite, ovate-cordate, acuminate; veins maroon; sinus deep and narrow, petiole maroon at base and apex."

For an illustration of this yam, see Plate VI.

55562. "*Bottle-Necked Lisbon*. This is a white-fleshed yam, which, when cooked, is mealy and of good flavor. The vine is green, with very narrow reddish wings. Leaves on young plants alternate, sagittate, basal lobes pointed; sinus very broad."

55563. Amygdalus persica L. Amygdalaceæ. Peach.

(*Prunus persica* Stokes.)

Seedling selected at the Plant Introduction Garden, Chico, Calif., from seed obtained through John R. Putnam, American consul at Valencia, Spain, under S. P. I. No. 43570.

"Fruit large, yellow, with red blush. Flesh golden yellow throughout, of excellent flavor; pit small, not deeply grooved. Weight about 9 ounces.

Ripens at the Chico Plant Introduction Garden about August 20. This variety is of exceptional value as a commercial canning peach. Remains firm when cooked, maintains its delicate flavor, and does not require a very heavy sirup." (*J. E. Morrow.*)

55564. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

Seedlings selected at the Plant Introduction Garden, Chico, Calif., from seed obtained through John R. Putnam, American consul at Valencia, Spain, under S. P. I. No. 43571.

"Fruits a fine golden yellow with red blush; basin deep, suture distinct; pit very small and yellow, not coloring the flesh. Flesh firm and of fine flavor. Should prove excellent for canning and a good shipper. Average weight of fruits about 5 ounces. Ripens at the Chico Plant Introduction Garden about August 20." (*J. E. Morrow.*)

55565. MILLETTIA MEGASPERMA (F. Muell.) Benth. Fabaceæ.

From Abergeldie, New South Wales. Seeds presented by Sir Hugh Dixson, Summer Hill. Received June 23, 1922.

"This plant is quite unlike Chinese or Japanese varieties of wistaria. It has dark-green foliage and is a rank grower when established; mine is growing over a park railing 90 feet long, 4 feet wide, and 5 feet high and has to be kept within bounds on width and height. It is not particular as to soil, but I would not advise a heavy clay. The plant stands 8 to 10 degrees of frost without injury. The flowers are darker purple than those of the Chinese variety, sweet scented, and are borne in dense panicles. It is a very shy seeder, with seldom more than one seed in a pod but it strikes root freely when layered and also from cuttings. The root of a layer afterwards potted had the largest number of nodules I have ever seen on any leguminous plant. It is an exceedingly rare plant simply because its good qualities are not known." (*Dixson.*)

For previous introduction, see S. P. I. No. 50518.

55566. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. **Yerba maté**

From Asuncion, Paraguay. Seeds presented by C. Fiebrig, director, Botanical Garden. Received May 27, 1922.

A small evergreen tree, native to Paraguay and Brazil, whose leaves are roasted and ground to make the Paraguay tea or *maté* of commerce. This plant may prove suitable for Florida and California.

For previous introduction, see S. P. I. No. 55489.

55567 and 55568. DIOSCOREA spp. Dioscoreaceæ. **Yam.**

From Ogbomosho, Nigeria, Africa. Tubers presented by Dr. George Green. Received June 23, 1922. Quoted notes by R. A. Young.

55567. DIOSCOREA CAYENENSIS Lam. **Yellow Guinea yam.**

(Nos. 11, 12, and 14.) "Three tubers, apparently all of the same variety, from a mixed lot. The flesh is cream colored instead of yellow, as in the variety of this species previously received from West Indian sources, and is less bitter; the quality is good. The vine is dark shiny green and thorny, with alternate leaves."

55568. DIOSCOREA ROTUNDATA Poir. **White Guinea yam.**

(No. 1.) "The specimen received is white fleshed, mealy, and of fair flavor when cooked. The vine is round stemmed, glaucous, and armed on the lower parts with short but strong recurved thorns. The leaves are opposite and on the lower parts of the main stem are modified into peculiar bracts, from the axils of which arise lateral branches. The variety appears to be different in quality from the one commonly grown in Porto Rico."

INDEX OF COMMON AND SCIENTIFIC NAMES.

Acacia albida, 55419.
catechu, 55420.
nubica, 55421.
spirocarpa, 55422.
verugera, 55423.
Acanthosicyos horrida, 55486.
Aeluropus repens, 55029.
Alfalfa, *Medicago sativa*, 55390, 55517–55519.
Allium odorum, 55442.
Allspice, *Pimenta officinalis*, 55102.
Alopecurus pratensis, 55375.
Amaranthus caudatus, 55424.
paniculatus, 55425.
viridis, 55405.
Amerimnon sissoo, 55411.
Amygdalus persica, 55487, 55549, **55563, 55564.**
persica × *communis*, 55470.
Androsace sp., 55254.
spinulifera, 55253.
Anemone rupicola, 55255.
Annona senegalensis, 55554.
Anthyllis vulneraria, 55376.
Apple. See *Malus* spp.
Aralia cachemirica, 55000.
Arrhenatherum avenaceum. See *A. elatius*.
elatius, 55377.
Atalantia buxifolia. See *Severinia buxifolia*.
Avena nuda, 55479.
sativa, 55031–55039, 55378, 55466, 55467.
sterilis, 55520–55524.
Avocado, *Persea americana*, 55509.

Banana, *Musa arnoldiana*, 55101.
M. paradisiaca sapientum:
Chamaluco, 55246.
Ice Cream, 55247.
Iholena, 55248.
Kona Maiamaule, 55249.
Largo, 55250.
Miamauli, 55249.
Porto Rico, 55251.
Red Cuban, 55252.
Barberry. See *Berberis* spp.
Barley. See *Hordeum* spp.
Baryxylum africanum, 54988.
Basella rubra, 55065.
Bean, adsuki, *Phaseolus angularis*, 55430–55432.
Lima, *P. lunatus*, 54995.
mung, *P. aureus*, 55433, 55434.
soy, *Soja max*, 55069, 55070, 55437.
Yard-Long, *Vigna sesquipedalis*, 55438, 55439.
Beet, *Beta vulgaris*, 55379, 55380.
Berberis spp., 55074, 55075.
aggregata prattii, 55071.
dielsiana, 55072.
poireti, 55073.
Berry, salmon, *Rubus spectabilis*, 55371.
Beta vulgaris, 55379, 55380.
Betula medwediewi, 55076.
Birch, *Betula medwediewi*, 55076.
Blackberry. See *Rubus* spp.
Bluegrass, Kentucky, *Poa pratensis*, 55393.
Bolusanthus speciosus, 55555.
Bouca burmanica. See *B. oppositifolia*.
oppositifolia, 55046.
Brassica napus, 55381.
pekinensis, 54972.
Buckwheat, *Fagopyrum vulgare*, 55427.
Buddleia japonica, 55077.

Callicarpa giraldiana, 55078.
Campanula spp., 55256, 55257.
Capsicum annuum, 55472–55475.
Caragana sp., 55258.
Cardamine sp., 55259.
Carica papaya, 54992, 55468.
Carob, *Ceratonia siliqua*, 55464.
Habathi, 55448.
Matalafera, 54977.
Roches, 54978.
Sandalawi, 55449.
Schehabi, 55450.
Carrot, *Daucus carota*, 55383.
Casimiroa tetrameria, 55445.
Cassia sp., 55049.
nodosa, 54984.
siamea, 55025.
timoriensis, 55026.
Castanea sativa, 55079.
Cedar, East African, *Juniperus procera*, 55484.

Ceratonia siliqua, 54977, 54978, 55448–55450, 55464.
Chenopodium quinoa, 55051, 55471.
Cherry, *Prunus majestica*, 55417, 55476, 55498, 55500.
Chestnut, *Castanea sativa*, 55079.
Citrus spp., 55030, 55414–55416.
inodorus. See *Microcitrus inodora*.
Clematis spp., 55260, 55261.
Cloudberry, *Rubus chamaemorus*, 55370.
Clover, alsike, *Trifolium hybridum*, 55396.
red, *T. pratense*, 54980, 54999, 55002, 55368, 55397, 55502.
white, *T. repens*, 54979, 54993, 54994, 55398.
Codonopsis spp., 55262, 55263.
Coffea sp., 55100.
laurentii, 55042.
robusta. See *C. laurentii*.
Coffee. See *Coffea* spp.
Coix lacryma-jobi, 55413.
Colombian berry, *Rubus macrocarpus*, 55408, 55409.
Copihue, *Lapageria rosea*, 55372.
Coriander, *Coriandrum sativum*, 55426.
Coriandrum sativum, 55426.
Corn, *Zea mays*, 55045.
Bankutka, 55047.
Florentinka, 55048.
Cotoneaster spp., 55084–55086.
adpressa, 55080.
moupinensis, 55081.
multiflora, 55082.
salicifolia rugosa, 55083.
Cotton. See *Gossypium* spp.
Cowpea, *Vigna sinensis*, 55440, 55441.
Crab apple. See *Malus* spp.
Cremanthodium spp., 55264–55266.
Crepis sp., 55267.
Crotalaria juncea, 55369.
Cucumis melo, 55399–55404.
Cucurbita pepo, 55367, 55463.
Cynoglossum sp., 55268.

Dactylis glomerata, 55382.
Dalbergia sissoo. See *Amerimnon sissoo*.
Daucus carota, 55383.
Delphinium sp., 55269.
Deutzia spp., 55088, 55270.
schneideriana laxiflora, 55087.
Dioscorea alata, 54983, 55003, 55412, 55492, 55559–55562.
cayenensis, 55482, 55567.
esculenta, 54975.
rotundata, 55568.
Diospyros sp., 54989.
Draba sp., 55271.

Echinochloa crusgalli edulis, 55004–55023.
Eranthemum purpureum, 55050.
Erythrina micropteryx. See *E. poeppigiana*.
poeppigiana, 55040.
Euonymus sp., 55272.
Fagopyrum vulgare, 55427.
Fescue, *Festuca heterophylla*, 55066.
hard, *F. duriuscula*, 55384.
meadow, *F. elatior*, 55385.
Festuca duriuscula, 55384.
elatior, 55385.
heterophylla, 55066.
Foxtail, meadow, *Alopecurus pratensis*, 55375.
Fragaria spp., 54976, 55516.
vesca semperflorens, 54996.
Fritillaria sp., 55273.

Garcinia sp., 55455.
mangostana, 55496, 55552.
tinctoria, 55105, 55454.
xanthochymus. See *G. tinctoria*.
Gentiana spp., 55275–55279.
detonsa, 55274.
Girardinia palmata, 55001.
Glycine hispida. See *Soja max*.
Gorli, *Oncoba echinata*, 55465.
Gossypium spp., 55099, 55451–55453.
anomalum, 55410.
Grape, *Vitis davidii*, 55098.
Grass, *Aeluropus repens*, 55029.
kokoma, *Manisuris exaltata*, 55068.
meadow, rough-stalked, *Poa trivialis*, 55394.
orchard, *Dactylis glomerata*, 55382.
Phalaris bulbosa, 55067.
rye, Italian, *Lolium multiflorum*, 55387, 55528.
velvet, *Notholcus lanatus*, 55391.

Hedychium sp., 55280.
Hemerocallis sp., 55281.
Hibiscus spp., 55057–55064, 55167–55211.
cannabinus, 55481.
rosa-sinensis, 55444.
syriacus, 55166.
Holcus lanatus. See *Notholcus sorghum*, 55106–55165, 55428.
Honeysuckle. See *Lonicera* spp.
Hordeum distichon palmella, 55386.
vulgare pallidum, 55525–55527, 55551.

Ilex paraguariensis, 55489, 55493, 55566.
Incarvillea sp., 55282.
Iris spp., 55283–55292.

Jacaratia mexicana, 55469.
Job's tears, *Coix lacryma-jobi*, 55413.
Juglans spp., 55373, 55374.
Jujube, *Ziziphus jujuba*, 55056.
Indian, *Z. mauritiana*, 55485.
Juniperus procera, 55484.

Kassod tree, *Cassia siamea*, 55025.
Kidney vetch, *Anthyllis vulneraria*, 55376.
Kleinhovia hospita, 54985.

Lapageria rosea, 55372.
Larkspur, *Delphinium* sp., 55269.
Lens esculenta. See *Lentilla lens*.
Lentil, *Lentilla lens*, 55490, 55491.
Lentilla lens, 55490, 55491.
Ligustrum delavayanum, 55089.
Lilium spp., 55293–55295.
Lily. See *Lilium* spp.
  water, *Nymphaea* sp., 54982.
Lime, Russell River, *Microcitrus inodora*, 55447.
Limonium brassicaefolium × *imbricatum*, 55043.
  fruticans, 55044.
Lolium multiflorum, 55387, 55528.
Lonchocarpus speciosus. See *Bolusanthus speciosus*.
Lonicera spp., 55296, 55297.
Lotus corniculatus, 55388.
Lupine, *Lupinus* sp., 55052.
Lupinus sp., 55052.
Lychnis spp., 55298, 55299.
Lycopersicon esculentum, 55483, 55503.

Malabar nightshade, *Basella rubra*, 55065.
Malus spp., 55053, 55054.
  sylvestris, 55212–55232.
Mangosteen, *Garcinia mangostana*, 55496, 55552.
Manisuris exaltata, 55068.
Matasano, *Casimiroa tetrameria*, 55445.
Meadow foxtail, *Alopecurus pratensis*, 55375.
Meconopsis spp., 55303, 55304.
  aculeata, 55300.
  primulina, 55301.
  pseudointegrifolia, 55302.
Medic, black, *Medicago lupulina*, 55389.
Medicago lupulina, 55389.
  sativa, 55390, 55488, 55517–55519.
Meibomia rensoni, 55446.
Melastoma repens, 55443.
Microcitrus inodora, 55447.
Millet, barnyard, *Echinochloa crus-galli edulis*, 55004–55023.
Millettia megasperma, 55565.
Musa arnoldiana, 55101.
  paradisiaca sapientum, 55246–55252.
Muskmelon, *Cucumis melo:*
  Chitta, 55,399.
  Khurra, 55400.
  mixed, 55404.
  Safada, 55401, 55402.
  Sarda, 55403.
Nageia nagi, 55477.
Nightshade, Malabar, *Basella rubra*, 55065.
Notholcus lanatus, 55391.
Nymphaea sp., 54982.

Oats. See *Avena* spp.
Oncoba echinata, 55465.
Onion, *Allium odorum*, 55442.
Oreocharis sp., 55305.
Ornithopus sativus, 55548.
Oryza sativa, 55429.

Palm, *Pinanga insignis*, 54986.
Papaya, *Carica papaya*, 54992, 55468.
Passiflora maliformis, 55028.
Peach, *Amygdalus persica*, 55563, 55564.
  Goodman's Choice, 55549.
  Pomona Improved, 55487.
Peach-almond hybrid, *Amygdalus persica* × *communis*, 55470.
Pear. See *Pyrus* spp.
Peltophorum africanum. See *Baryxylum africanum*.
Pepper, red, *Capsicum annuum*, 55472–55475.
Persea americana, 55509.
  gratissima. See *P. americana*.
Persimmon, *Diospyros* sp., 54989.
Phalaris bulbosa, 55067.
Phaseolus angularis, 55430–55432.
  aureus, 55433, 55434.
  lunatus, 54995.
  semierectus, 55418.
Phleum alpinum, 55435.
  pratense, 55024, 55392, 55436, 55480.
Phlomis sp., 55306.
Picea sp., 55307.
Pimenta officinalis, 55102.
Pinanga insignis, 54986.
Plum, *Prunus* sp., 55090.
Poa pratensis, 55393.
  trivialis, 55394.
Podocarpus nagi. See *Nageia nagi*.
Potato, *Solanum tuberosum:*
  Adirondack, 55510.
  Brownell's Beauty, 55511.
  Carmen No. 1, 55512.
  Chauchas (early), 55456–55462.
  Cueruda blanca, 55557.
    morada, 55558.
  Edgecote Purple, 54981.
  Manhattan, 55513.
    Black, 55514.
  Petronius, 55406.
  Queen of the Valley, 55515.
  Rubin, 55407.
Primrose. See *Primula* spp.

Primula spp., 55341–55351.
bella, 55308.
blattariformis, 55309.
brevifolia, 55310.
dryadifolia, 55311, 55312.
malvacea, 55313, 55314.
muscarioides, 55315–55319.
nivalis, 55320–55332.
poissoni, 55333, 55334.
secundiflora, 55335, 55336.
sikkimensis, 55337, 55338.
sinopurpurea, 55339.
vinciflora, 55340.
Privet, *Ligustrum delavayanum*, 55089.
Prunus sp., 55090.
majestica, 55417, 55476, 55498, 55500.
persica. See *Amygdalus persica*.
Psidium sp., 55103.
Pyracantha sp., 55091.
crenulata yunnanensis, 54991.
Pyrola sp., 55352.
Pyrus spp., 54997, 55055, 55497, 55550.
calleryana, 55027.
communis, 55233–55245.
malus. See *Malus sylvestris*.
pashia, 54998.

Quinoa, *Chenopodium quinoa*, 55051, 55471.

Rape, *Brassica napus*, 55381.
Raspberry. See *Rubus* spp.
Rheedia edulis, 55553.
Rheum sp., 55353.
Rhododendron spp., 55354–55359.
Ribes sp., 55093.
meyeri turkestanicum, 55092.
Rice, *Oryza sativa*, 55429.
Rosa omeiensis pteracantha, 55094, 55095.
Rose, *Rosa omeiensis pteracantha*, 55094, 55095.
Rottboellia exaltata. See *Manisuris exaltata*.
Rubus spp., 55505–55508.
chamaemorus, 55370.
ellipticus, 55499.
flavus. See *R. ellipticus*.
macrocarpus, 55408, 55409.
spectabilis, 55371.
Rumex tuberosus, 55494.
Rye, *Secale cereale*, 55395.

Sabinea carinalis, 55041.
Saccharum officinarum, 55501.
Salmon berry, *Rubus spectabilis*, 55371.
Salpichroa rhomboidea, 55478.
Saxifraga spp., 55360–55364.
Serradella, *Ornithopus sativus*, 55548.
Severinia buxifolia, 55495.
Sissu, *Amerimnon sissoo*, 55411.
Soja max, 55069, 55070, 55437.
Solanum tuberosum, 54981, 55406, 55407, 55456–55462, 55510–55515, 55557, 55558.
Sorbaria sp., 55097.
arborea subtomentosa, 55096.
Sorghum, *Holcus sorghum*, 55106–55165, 55428.
Sorghum vulgare. See *Holcus sorghum*.
Sorrel, *Rumex tuberosus*, 55494.
Spruce, *Picea* sp., 55307.
Squash, *Cucurbita pepo*, 55367, 55463.
Statice brassicaefolium × *imbricatum*. See *Limonium brassicaefolium* × *imbricatum*.
fruticans. See *Limonium fruticans*.
Strawberry. See *Fragaria* spp.
Sugar cane, *Saccharum officinarum*, 55501.
Sunn hemp, *Crotalaria juncea*, 55369.
Swertia sp., 55365.

Telfairia pedata, 55504.
Timothy, *Phleum pratense*, 55024, 55392, 55436, 55480.
Tomato, *Lycopersicon esculentum*, 55483, 55503.
Trifolium hybridum, 55396.
pratense, 54980, 54999, 55002, 55368, 55397, 55502.
repens, 54979, 54993, 54994, 55398.
Triticum durum, 55529–55546, 55556.

Uvaria sp., 54987.

Vangueria infausta, 54990.
Veratrum sp., 55366.
Vetch, *Vicia michauxii*, 55547.
kidney, *Anthyllis vulneraria*, 55376.
Vicia michauxii, 55547.
Vigna sesquipedalis, 55438, 55439.
sinensis, 55440, 55441.
Vitis davidii, 55098.
Voandzeia subterranea, 55104.

Wheat, durum, *Triticum durum*, 55529–55546, 55556.

Yam, *Dioscorea* spp.:
Barbados Red, 55561.
Bottle-Necked Lisbon, 55562.
greater, *D. alata*, 54983, 55003, 55492, 55559–55562.
lesser, *D. esculenta*, 54975.
Potato, 54975.
Purple Ceylon, 55412.
(unnamed), *D. cayenensis*, 55482.
West Red, 55560.
West White, 55559.
White Guinea, *D. rotundata*, 55568.
Yellow Guinea, *D. cayenensis*, 55567.
Yerba maté, *Ilex paraguariensis*, 55489, 55493, 55566.

Zea mays, 55045, 55047, 55048.
Ziziphus jujuba, 55056.
mauritiana, 55485.

Issued July, 1924.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1922.

(No. 72; Nos. 55569 to 55813.)

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1924.

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
10 CENTS PER COPY

CONTENTS.

	Page.
Introductory statement	1
Inventory	5
Index of common and scientific names	39

ILLUSTRATIONS.

		Page.
PLATE I.	A young specimen of the mu-yu shu, or mu-oil tree. (*Aleurites montana* (Lour.) Wilson; S. P. I. Nos. 55647 to 55650)	14
II.	The carambola, a favorite fruit of southern China. (*Averrhoa carambola* L.; S. P. I. Nos. 55651 and 55652)	14
III.	An attractive relative of the magnolias. (*Michelia excelsa* Blume; S. P. I. No. 55690)	14
IV.	A new wild rose from southwestern China. (*Rosa* sp.; S. P. I. No. 55721)	24
V.	A new hybrid pear. (*Pyrus serotina* × *communis;* S. P. I. No. 55805)	24

INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1922 (NO. 72; NOS. 55569 TO 55813).

INTRODUCTORY STATEMENT.

The Chinese Province of Yunnan has in the past yielded many interesting ornamental plants to European collectors, but this inventory records the first time that an agricultural explorer from the Department of Agriculture has penetrated its mountain slopes and vast plains, where a climate similar to that of our Atlantic seaboard prevails.

While no such severe weather as that of the Dakotas ever visits this back country of China, it is a land of heavy frosts, and plants from its plains may be expected to do well in many parts of our Eastern States, while those from its wetter mountain slopes will doubtless find a congenial home in the Puget Sound region.

The plants which appear in this inventory represent a small fraction only of the great collections which the department's explorer, J. F. Rock, has gathered under conditions of living and travel which would daunt any but the real enthusiast. His travels have taken him over hundreds of miles of almost impassable mountain trails and roads through regions where Chinese bandits abound and have necessitated a constant association month after month with people who neither understand what he is doing nor care regarding his fate.

From the Likiang Snow Range, at an altitude of 11,000 feet, Mr. Rock sent six rare lilies, one of them *Lilium sutchuenense* (No. 55609), and five others as yet undetermined (Nos. 55610, 55730, and 55778 to 55780). From Likiang he forwarded seeds of a white-flowered ornamental bush (*Prinsepia utilis;* No. 55719), a fine climbing rose (No. 55721), and a wild species of cherry (No. 55720) that grows to 50 feet in height which he suggests may be used as a stock for the cultivated cherries. At Nguluke, in the Likiang Valley, 8,000 feet above sea level, Mr. Rock found a small, sour, red-fruited apricot (*Prunus armeniaca;* No. 55729) of deliciously fragrant aroma, which is used there for stewing and jam making, and in the foothills of Talifu he obtained seeds of the rare cherry (*P. majestica;* No. 55732) which grows into large trees and has a vigor suggesting its use as a stock or as an ornamental flowering tree. Seeds from large freestone peaches (*Amygdalus persica;* Nos. 55775 and 55776) borne by trees growing wild near Puerhfu and seeds of a large-fruited plum (*Prunus* sp.; No. 55783) from the same region are part of his shipments which have recently arrived.

H. R. Wright, of Auckland, New Zealand, to whom the department is indebted for many valuable collections of new fruit varieties, has sent his "Sunrise" (No. 55740), a very early variety of peach, and "Watts Early" (No. 55741), a peach worth testing in Florida because of the unusually short resting period which it requires. He also sent the Groverly Navel orange (*Citrus sinensis;* No. 55743), which is reported to be a large-sized variety with a habit for cropping which should make it worth a trial both in California and Florida.

G. Weidman Groff, of the Canton Christian College, has sent from South China a collection of trees, including the mu-oil tree (*Aleurites montana;* Nos. 55647 to 55650), some varieties of persimmon (*Diospyros kaki;* Nos. 55659 and 55660), an undetermined species of Diospyros (No. 55662), an interesting rare ornamental (*Millettia dielsiana;* No. 55663), two varieties of the carambola (*Averrhoa carambola;* Nos. 55651 and 55652), a fruit tree recently attracting attention in southern Florida, and a large promising ornamental tree from the Five Finger Mountains (*Nageia cupressina;* No. 55664).

F. A. McClure, also of the Canton Christian College, secured for the department during his recent exploration of the island of Hainan, off the coast of South China, several interesting plants (Nos. 55626 to 55632) and from Lokong in Kwantung seeds of 13 named varieties of *Prunus mume* (Nos. 55633 to 55645), from which some valuable strains of this lovely flowering tree may originate in this country.

Prof. C. S. Sargent, of the Arnold Arboretum, has favored the department with material from a new hardy Chinese shrub (*Prinsepia sinensis;* No. 55711) whose yellow flowers appear very early in the spring and entitle it to a place in every North Atlantic garden, even should its fruits not meet with an enthusiastic reception in America. The genus with its several species is worthy of the attention of American horticulturists.

The success which attended the introduction through this office many years ago of the hairy Peruvian alfalfa is a matter of history. Crops of it worth several million dollars are grown every year in southern California. Growers will watch with interest the introduction now of the so-called San Pedrana variety (*Medicago sativa;* No. 55724) from Peru which, according to Mr. Dunn, is cut every 45 days.

Although it is yet too soon to predict the ultimate fate of the lowland Guatemalan anona in southern Florida, its growth there has been so satisfactory that a large quantity of seed of this species (*Annona diversifolia;* No. 55709) has been imported from Tapachula.

The so-called subterranean clover of Australia (*Trifolium subterraneum;* No. 55707), which was introduced several years ago, has shown so much promise in the Southern States that a second importation of seeds has been necessary.

A beautiful Australian shade tree, *Vitex littoralis*, grew 30 feet tall at Del Monte, Calif., years ago, but was cut down by a temperature of 17° F. A New Zealand species of this same genus (*V. lucens;* No. 55620) may prove hardier than its relative.

It seems strange that a magnificent tree in the mountain gorges of the great African continent should be in danger of becoming extinct, but such is the case. In fact, so fast are some of the wonderful forest trees of the globe disappearing that our grandchildren, even when they circle the world through the air, will not have the supreme pleasure which the Africanders had, as, traveling at a snail's pace with ox teams across the veldt, they stood in the presence of the leafy giants of the Milanji cypress, whose crowns rose 140 feet above the earth. From Southern Rhodesia W. L. Thompson, of the American Board Mission, has sent the department seed of this wonderful tree (*Callitris whytei;* No. 55602) which survives now only in the gorges of that region not visited by forest fires, and it is hoped that these may grow and establish themselves in other regions.

G. H. Cave, the curator of the Lloyd Botanic Gardens at Darjiling, to whom in the past the department has been indebted for many courtesies, has sent a remarkable collection of seeds of Himalayan ornamental and economic trees and shrubs (Nos. 55669 to 55706). It includes one of the hill bamboos (*Cephalostachyum capitatum;* No. 55676); a yellow-flowered clematis (*C. grewiaeflora;* No. 55677); a species of that small genus to which belongs the Japanese loquat (*Eriobotrya hookeriana;* No. 55679) with egg-shaped yellow fruits three-fourths of an inch long, possibly useful for breeders or as a stock; *Ilex insignis* (No. 55682), which has proved hardy in Ireland; a bright-flowered Indigofera (No. 55683); the famous pink-flowered Himalayan magnolia (*Magnolia compbellii;* No. 55688); three species of Michelia (Nos. 55689 to 55691), trees with magnolialike flowers and foliage, one of them the principal timber tree of the Darjiling Hills; the Himalayan spruce (*Picea smithiana;* No. 55694); and a Himalayan cherry (*Prunus napaulensis;* No. 55696) from an altitude of 10,000 feet.

Guarana is a paste that is much used by the natives of the Amazon Valley to make a beverage which contains caffein and, like cacao and coffee, is a stimulant. It is prepared from the grapelike fruits of a climbing shrub (*Paullinia cupana;* No. 55738), the culture of which in Brazil has been a lucrative industry. Seeds of this shrub have been presented by Doctor da Costa, of Rio de Janeiro.

The so-called kiffy of Sierra Leone is the roasted seed of a cucumberlike plant (*Cucumeropsis mannii;* No. 55792) which is used as a condiment by the natives in the preparation of their remarkable dish known as dumboy.

Doctor Shirai, of Komaba, Japan, has presented plants of two distinct varieties of *Elaeagnus multiflora* (Nos. 55771 and 55772), the "Ogumi" and the "Togumi." As this species grows well on the Atlantic seaboard, these two large-fruited varieties will be wanted by those who have the ordinary small-fruited form.

Doctor Shantz has imported, in order to test again, the narras (*Acanthosicyos horrida;* No. 55763), a melonlike fruit which the Hottentots grow on the sand dunes of the Kalahari Desert and upon which they live for months.

The wild black cherry (*Prunus serotina*) has been determined to be botanically identical with the capulin of Central America and northwestern South America; but, whereas Americans have done nothing to improve this native cherry, our southern neighbors have

by selection evolved from their wild capulin or native cherry a large delicious fruit which is borne in clusters and is sold on their markets (Nos. 55764 and 55765).

Norman M. Ross, who has for many years tested the dwarf pea tree in his Forestry Station at Indian Head, Canada, recommends for wide distribution throughout the Northwest this handsome shrub (*Caragana pygmaea;* No. 55769) of Siberia and furnishes seeds for that purpose.

The "Toeban" (*Arachis hypogaea;* No. 55810), an early-maturing bunch strain of peanut which is resistant to the bacterial disease prevalent in Java caused by *Bacterium solanacearum*, will interest peanut growers in America; and Mr. Morrow's new peach (No. 55813) that originated as a sucker at the Chico garden from a stock which was used for the Tangutian almond (*Amygdalus tangutica*) proves to be a week later than the Elberta and of finer texture than that standard variety.

The botanical determinations of seeds introduced have been made and the nomenclature revised by H. C. Skeels; and the descriptive and botanical notes have been arranged by Paul Russell, who has had general supervision of this inventory.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., September 17, 1923.

INVENTORY.[1]

55569 to 55572.

From Cuenca, Ecuador. Seeds presented by Dr. Federico Malo. Received July 24, 1922. Quoted notes by Doctor Malo.

55569 to 55571. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

"These are from the principal localities where alfalfa is produced; that which comes from the town of Guanando is considered especially good."

55569. "From Dr. José A. Avilez, town of Guano."

55570. "Purchased from Paula Iza, who brought it from Cuchibamba, near Ambato."

55571. "Obtained from Antonio Moyano and said to have been grown at Guanando."

55572. TRIFOLIUM REPENS L. Fabaceæ. **White clover.**

"This white-flowered clover from the vicinity of Burgay, near Biblian, is produced spontaneously; the stock are very fond of it."

55573 and 55574. PHASEOLUS AUREUS Roxb. Fabaceæ. **Mung bean.**

From Manila, Philippine Islands. Seeds presented by George S. Logan, through the Bureau of Foreign and Domestic Commerce, United States Department of Commerce. Received July 6, 1922.

These two varieties of the mung bean were originated at the Lamao Experiment Station. The mung bean is cultivated throughout southern Asia and the adjacent islands, where its seeds constitute a very important human food and its straw a valuable fodder.

55573. *Yellow mongo.* 55574. *Green mongo.*

55575 to 55578. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

From Bogota, Colombia. Seeds presented by Q. U. Thompson. Received July 25, 1922.

These tomatoes are introduced from various places in Colombia in the hope of finding a strain which will prove immune to leaf-spot, a serious pest in this country.

55575. From Bogota. 55577. From Fusagasuga.

55576. From Girardot. 55578. From San Antonio de Tena.

---

[1] It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

55579. CYRTOSTACHYS LAKKA Beccari. Phœnicaceæ. **Palm.**

From Singapore, Straits Settlements. Seeds presented by I. Henry Burkill, superintendent, Botanic Gardens. Received July 24, 1922.

A stately and elegant palm, native to the East Indies, with a slender spineless stem crowned by a cluster of boldly arched pinnate leaves 3 to 4 feet in length. It is distinguished by its red leaf sheaths. The fruits are elongate egg-shaped and about half an inch long. (Adapted from *Beccari, Annales du Jardin Botanique de Buitenzorg, vol. 2, p. 141,* and *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 947.*)

J. F. Rock recommends this as a handsome ornamental plant, probably suitable for cultivation in southern Florida. It is doubtful whether it will withstand heavy frosts.

For previous introductions, see S. P. I. Nos. 49530 and 51870.

55580 to 55584.

From Canton, China. Plants presented by the Canton Christian College, through F. A. McClure. Received July 29, 1922. Quoted notes by Mr. McClure.

55580 and 55581. FORTUNELLA spp. Rutaceæ. **Kumquat.**

Introduced for department specialists engaged in citrus-breeding experiments.

55580. FORTUNELLA sp.

"(C. C. C. introduction No. 793.) Obtained from near a Chinese village (Sants'uen) in the island of Hainan, where it is found in a semicultivated state. The natives gather the fruits, which ripen in November, and eat them fresh or candy them. Some few of the fruits find their way to the markets, although they are not generally much in favor with the Chinese, owing to their acid taste. They have almost no seed, and in this respect are excellent for candying. The fruits are small, seldom attaining a size of more than an inch in diameter; the segments adhere to each other very firmly. The plants are never grafted, but are allowed to spring up from scattered seed."

55581. FORTUNELLA sp.

"(C. C. C. introduction No. 794.) Obtained from the wild in the Five Finger Mountains of the island of Hainan. I found the plant in flower in May. A few fruits at that time were brought to me by the natives. The flavor is rather sweeter than one would expect to find in wild fruits; these are not of commercial importance, as they are known only by the primitive tribes that inhabit the interior of the island. They gather the wild fruits and evidently consider them quite a delicacy, although they never take the trouble to plant the seeds near their houses. There is a slight prominence on the fruit at the stem end, which is characteristic."

55582 and 55583. PHYLLOSTACHYS spp. Poaceæ. **Bamboo.**

"These are grown for timber and also for food, the young shoots being eaten."

55582. PHYLLOSTACHYS sp.

"(C. C. C. observation No. 901.2.) *Tai t'au tim chuk.*"

55583. PHYLLOSTACHYS sp.

"(C. C. C. observation No. 901.2.) *Ma chuk.*"

55584. ZIZANIA sp. Poaceæ. **Wild rice.**

"(C. C. C. introduction No. 860.) *Kau sun.* This is grown by the Chinese in wet culture. The stock at the crown becomes infected with a smut, and the enlarged growth at that point is used as food. This product is very similar in appearance, texture, and flavor to the bamboo shoots and is prepared in the same manner."

55585. OXALIS TUBEROSA Molina. Oxalidaceæ. **Oca.**

From Tucuman, Argentina. Tubers presented by E. F. Schultz, horticulturist, Agricultural Experiment Station. Received July 31, 1922.

"A plant related to our common sheep sorrel, widely cultivated in Peru and Bolivia for the sake of its fleshy rootstocks, which are an important article of food. In some districts ocas are second only to potatoes, while in others ullucus (*Ullucus tuberosus* Caldas) are more important, or at least are sold more generally in the native markets. Ocas are eaten raw, as well as cooked, and are also frozen and dried. Ocas prepared in this last-mentioned way are called caya, a term corresponding to chuño, the name of the dried potatoes. Raw ocas, when first dug, have a distinctly acid taste, like sheep sorrel, but this is lost after the tubers have been exposed to the sun.

"The plant attains a height of 1 foot or more and has the general appearance of a large plant of sheep sorrel. The flowers are yellow, and the leaflets are folded at night or in wet weather, the same as the sheep sorrel.

"The varieties are numerous, though much fewer than in the case of the potato. Some are preferred for eating raw and others for the making of caya. The texture of the tubers is very tender and juicy. In form some are nearly cylindrical, while others are slender at the base and strongly thickened at the end. The colors vary from white or light pink through darker pinks or yellows to deep purplish red. The range of colors is much the same as in the ullucu, but no deep-yellow varieties were seen, nor any with spots, except that some have bands of deeper color across the eyes.

"In addition to the pleasing coloration, the surface of the tubers is smooth and clear, so that the general appearance is very attractive. The texture of the flesh is also very tender and crisp. If the taste should prove acceptable, ocas might become very popular for salads and pickles, if not for other purposes. The nature and habits of the plant indicate that it may be adapted to acid soils, which would be a distinct advantage in some parts of the United States." (*O. F. Cook.*)

For previous introductions, see S. P. I. Nos. 41168 to 41176.

55586. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Buenos Aires, Argentina. Seeds presented by D. S. Bullock, agricultural commissioner, Bureau of Agricultural Economics, United States Department of Agriculture. Received July 28, 1922.

Introduced for comparison and cultural experiments.

55587. PRUNUS SERRULATA Lindl. Amygdalaceæ.
Japanese flowering cherry.

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received July 24, 1922.

Forma *lannesiana*. A variety of Japanese cherry known as *Mazakura* (synonym, *Dai Sakura*), used in Japan as a stock. Prof. Yugo Hoshino, of the Tohoku Imperial University at Sapporo, is quoted as follows in Hedrick's "Cherries of New York," p. 75: "In the northern part of Japan proper (main island) it is a common practice to graft European cherries on a special kind of Japanese cherry. This cherry has a peculiar character which fits it for propagation, namely, it roots very easily either from cuttings or by mound layering. It is grown by nurserymen only and is called *Dai Sakura*. It has a somewhat dwarfing influence on scions and hastens their fruiting age."

For previous introduction, see S. P. I. No. 38206.

55588. MICROCITRUS AUSTRALASICA (F. Muell.) Swingle. Rutaceæ.
(*Citrus australasica* F. Muell.) **Finger lime.**

From Dundas, New South Wales. Seeds presented by Herbert J. Rumsey. Received July 13, 1922.

"The finger lime is one of the most curious and interesting of the citrus fruits. The young plants have more or less horizontally arranged branchlets, with very short internodes and small oval young leaves, these much shorter than the stiff, erect spines. The flowers are small, and the fruits are long

and slender, 2½ to 4 inches long, with a loose pulp filled with a sour, rather strongly pungent juice. The shrub is native to the mountain scrubs of the coastal region of northern New South Wales and Queensland." (*W. T. Swingle.*)

"This relative of the citrus fruits has been used in creating several hybrids, chiefly with the Calomondin (*Citrus mitis*), a Philippine species (see S. P. I. Nos. 27724 to 27736); also with the Mexican lime and the common lemon. The fruits produced, as a rule, have resembled the finger lime more closely than the other parents, not being sufficiently juicy as compared with lemons or limes for economic use, and possessing a peculiar aromatic odor. Their use as citrus stocks and as hedge plants, particularly in the semiarid regions of the Southwest, seems worth a trial, and experiments along this line are under way." (*T. Ralph Robinson.*)

55589. FRAGARIA sp. Rosaceæ. **Strawberry.**

From Paris, France. Seeds presented by Vilmorin-Andrieux & Co. Received July 26, 1922.

Introduced for experiments in strawberry breeding.

"This form is close to *Fragaria nilgerrensis;* it has the same foliage and the same small white fruits with darker seeds, but it is more vigorous, and the fruits might be considered as edible, whereas in the type their taste is unpleasant." (*Vilmorin-Andrieux & Co.*)

55590 and 55591. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

From Buenos Aires, Argentina. Presented by D. S. Bullock, agricultural commissioner, Bureau of Agricultural Economics, United States Department of Agriculture. Received July 26, 1922. Quoted notes by E. F. Schultz, Tucuman Experiment Station.

These tomatoes are introduced for the use of specialists in breeding blight-resistant varieties.

"The variety most extensively planted here in Tucuman, especially in the Lules region, is known under the name of *Parana.* It is generally regarded as the most blight-resistant variety, but my own experience has led me to the conclusion that it is not completely resistant, although there are always a number of plants which do not suffer at all when the rest of the plants have died from the disease."

55590. "Seeds of *Parana* from Lules, Tucuman."

55591. "Seeds from blight-resistant plants of *Parana*, grown at the Tucuman Experiment Station in 1921."

55592 and 55593. MUSA spp. Musaceæ. **Banana.**

From Kisantu, Belgian Congo. Seeds presented by Père J. Gillet, S. J., Jardin d'Essais de Kisantu. Received July 27, 1922. Quoted notes by Père Gillet.

"These bananas are handsomer and probably more hardy than *Musa ensete;* they grow in the mountains of Ruanda at altitudes of 6,500 feet or more."

55592. MUSA sp.

"An undetermined variety with white nerves."

55593. MUSA sp.

"An undetermined variety with red nerves."

55594 to 55597. DIOSCOREA ALATA L. Dioscoreaceæ. **Greater yam.**

From Holguin, Cuba. Tubers presented by Thomas R. Towns. Received July 24, 1922. Quoted notes by R. A. Young.

55594. *Pelua.* "A white-fleshed yam, comparatively small: tubers said to weigh 3 pounds each. Vine four angled, with narrow pale-maroon wings. Leaves broadly ovate, cordate, plain green."

55594 to 55597—Continued.

55595. *Frances.* "A white-fleshed yam; said to weigh up to 25 pounds or more in each hill. Vine four angled, with pale-maroon wings. Leaves alternate, broadly ovate, cordate, acuminate; sinus fairly deep and narrow."

55596. *Kohl-E-Patta.* "A white-fleshed yam whose tubers are said to weigh as much as 25 pounds to the hill."

55597. *Morado.* "This yam has purple inner skin and white flesh; it is said to weigh up to 25 pounds or more in each hill. The vine is four angled, with narrow maroon wings. Leaves broadly ovate, cordate, acuminate; sinus deep and narrow; petioles maroon at base and apex."

55598. Claucena lansium (Lour.) Skeels. Rutaceæ. **Wampi.**

(*C. wampi* Oliver.)

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, in charge, Department of Botany and Forestry, Experiment Station of the Hawaiian Sugar-Planters' Association. Received August 3, 1922.

The wampi is a very ornamental small tree, 18 to 20 feet in height; in the spring it bears small dense panicles of whitish sweet-scented flowers, and in midsummer appear the grapelike clusters of edible berries. The individual fruits are about the size of a large marble, with a rough, pale straw-yellow, orangelike rind covered with glands filled with green balsamic oil; the rather large seeds, one to three in number, are inclosed in colorless juicy pulp which has an agreeable aromatic acid flavor. The wampi is a native of South China, where the berries are highly esteemed, both as a dessert fruit and for preserves. Propagation is by seeds and layering. (Adapted from *Report of Hawaii Agricultural Experiment Station, 1914, p. 33.*)

For previous introduction and illustration, see S. P. I. No. 45328.

55599 to 55601.

From Richmond, Victoria. Seeds presented by F. H. Baker. Received July 29, 1922.

55599. Cassia laevigata Willd. Cæsalpiniaceæ.

An erect shrubby ornamental cassia several feet in height, with axillary and terminal racemes of large yellow flowers and cylindrical leathery pods, 2 to 3 inches long, inflated when ripe. Native to Queensland and New South Wales. (Adapted from *Bentham, Flora Australiensis, vol. 2, p. 282.*)

For previous introduction, see S. P. I. No. 53851.

55600. Indigofera australis Willd. Fabaceæ.

An attractive shrub 2 to 4 feet high, with erect branches, finely divided compound leaves, and dense racemes of very showy violet-red flowers. (Adapted from *Bentham, Flora Australiensis, vol. 2, p. 199.*)

For previous introduction, see S. P. I. No. 47152.

55601. Kennedia monophylla Vent. Fabaceæ.
(*Hardenbergia monophylla* Benth.)

An ornamental Australian vine, with alternate smooth leaves and a profusion of blue flowers borne in stalked racemes. The long carrot-shaped somewhat woody root is called "sarsaparilla" by the natives and is used in infusion as a substitute for that root. (Adapted from *Lindley, Treasury of Botany, vol. 1, p. 569.*)

For previous introduction, see S. P. I. No. 51757.

55602. Callitris whytei (Rendle) Engl. Pinaceæ.

(*Widdringtonia whytei* Rendle.)

From Mount Silinda, Southern Rhodesia. Presented by W. L. Thompson, American Board Mission. Received July 24, 1922.

"Native cedar of this region. These seeds are from trees in our own grounds." (*Thompson.*)

The *Milanji cypress* was originally found at an altitude of 10,000 feet on Mount Milanji, in Nyasaland, by Alexander Whyte. It is a magnificent tree reaching a height of 140 feet, sometimes with a clear straight trunk for 90 feet and a diameter of 5½ feet at 6 feet from the base. The pale reddish timber is of excellent quality and easily worked. The bark on old trees is of great thickness. These fine trees are rapidly disappearing before the forest fires, only those in damp gorges surviving. (Adapted from *Transactions of the Linnean Society, 2d ser., vol. 4, p. 60,* and *Gardener's Chronicle, 3d ser., vol. 37, p. 18.*)

For previous introduction, see S. P. I. No. 52807.

55603. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Roskilde, Denmark. Presented by Danske Landboforeningers Frøforsyning. Received August 2, 1922.

Timothy seed produced locally for several seed generations; introduced for breeding experiments.

55604. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Prague, Czechoslovakia. Presented by Basil Benzin. Received July 31, 1922.

Locally grown seed intrdouced for timothy breeding experiments.

55605 and 55606. RUMEX spp. Polygonaceæ.

From Okitsu, Japan. Seeds presented by T. Onda, director, Government Horticultural Experiment Station. Received August 2, 1922.

These sorrels, which are used as salad vegetables in Japan, are introduced for trial as food for diabetics.

55605. RUMEX ACETOSA L. **Sorrel.**

Suiba.

55606. RUMEX CRISPUS L. **Curly dock.**

Variety *japonicus. Gishi-gishi.*

55607. BOWENIA SPECTABILIS Hook. Cycadaceæ.

From Brisbane, Queensland. Seeds presented by C. T. White, Government botanist. Received August 1, 1922.

An Australian cycad with a short, thick, cylindrical stem which bears at the summit one or two large, very graceful, compound fernlike leaves. It makes a charming little ornamental and should thrive well in lath houses in Florida when given proper shade, a good supply of moisture, and soil rich in humus. (Adapted from *Curtis's Botanical Magazine, pl. 5398,* and *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 537.*)

55608. PRUNUS TOMENTOSA ENDOTRICHA Koehne. Amygdalaceæ. **Bush cherry.**

From Jamaica Plain, Mass. Cuttings presented by Dr. C. S. Sargent, Arnold Arboretum. Received August 9, 1922.

A large spreading shrub or small tree with densely hairy branches, dark-green, toothed, sharp-pointed leaves about 3 inches long, solitary white flowers three-fourths of an inch across, and dark-red fruits about half an inch in diameter. The plant is found native in western Hupeh and northern Shensi, China. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 225.*)

55609 and 55610. LILIUM spp. Liliaceæ. **Lily.**

From Likiang, Yunnan, China. Bulbs collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received August 9, 1922. Quoted notes by Mr. Rock.

55609 to 55610—Continued.

55609. LILIUM SUTCHUENENSE Franch. **Lily.**

"(No. 4402. Likiang, Yunnan. June 13, 1922.) A lily 3 to 4 feet in height, growing among limestone rocks and along brooks in scrub vegetation at an altitude of 10,000 to 11,000 feet on the Likiang Snow Range, near the Moso village of Nguluke. The flowers are borne at the apex of the stem in twos and threes and are very variable in color, ranging from orange-yellow to red and reddish brown, the inner part of the corolla being spotted purple."

55610. LILIUM sp. **Lily.**

"(No. 4532. Likiang, Yunnan. June 17, 1922.) A plant 2 to 2½ feet high, growing among limestone crags in pine and fir forests at altitudes of 12,000 feet and higher. These bulbs were collected on the slopes of the Likiang Snow Range. The flowers, which are smaller than those of *Lilium sutchuenense*, are green and marked on the outside and inside with deep purplish spots. The lobes are much reflexed, making the perianth pitcher shaped. This species is not common, while *L. sutchuenense* is found more frequently."

55611 to 55615. PHOENIX spp. Phœnicaceæ. **Palm.**

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received July 25, 1922.

"These Phoenix hybrids are all small plants, developing shoots from the base, and are highly ornamental. They have proved quite hardy here, withstanding the severe frost of 1920 (20° or 21° F.), the lowest temperature since 1829." (*Proschowsky.*)

55611. PHOENIX sp. (No. 1.)

55612. PHOENIX sp. (No. 2.)

55613. PHOENIX sp. (No. 3.)

55614. PHOENIX sp. (No. 4.)

55615. PHOENIX sp. (No. 5.)

55616. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Prague, Czechoslovakia. Presented by Basil Benzin. Received August 12, 1922.

Locally grown timothy seed introduced for the use of forage-crop specialists.

55617 and 55618.

From Aitutaki, Cook Islands. Tubers presented by W. T. Hewett. Received August 11, 1922. Quoted notes by R. A. Young.

55617. COLOCASIA ESCULENTA (L.) Schott. Araceæ. **Taro.**

"*Taro-repo.* A taro with slightly pink buds."

55618. XANTHOSOMA sp. Araceæ. **Yautia.**

"A white-fleshed yautia of good quality, received under the name 'taro-tarua.' The buds are very slightly tinged with pink."

55619 and 55620.

From Auckland, New Zealand. Seeds presented by Stanley G. Chambers, secretary, Auckland Acclimatisation Society. Received August 11, 1922.

55619. RHOPALOSTYLIS SAPIDA (Soland.) Wendl. and Drude. Phœnicaceæ. **Nikau.**

An elegant palm from New Zealand; it is of peculiar interest because of its distribution, as it occurs farther south than any species of palm in either Australia or South America, being found at 38° 22′ south lati-

55619 to 55620—Continued.

tude. The pinnate leaves, 4 to 6 feet in length, are borne on a trunk 6 to 12 feet high, and the very numerous flowers, occurring on a densely flowered, much-branched spadix, are pale pink. The young inflorescence is eaten by the natives of New Zealand. (Adapted from *Curtis's Botanical Magazine, pl. 5139.*)

For previous introduction, see S. P. I. No. 54298.

55620. VITEX LUCENS Kirk. Verbenaceæ. **Puriri.**

A fine tree, from 50 to 60 feet in height, native to New Zealand, but restricted to the northern part of North Island. It is often called the New Zealand oak on account of the strength and durability of its wood, which is not injured by damp or exposure and is therefore extremely valuable for shipbuilding purposes. The logs are often perforated with holes, the work of a soft-bodied grub which develops into the puriri moth. These holes do not affect the timber except that it sometimes has to be cut to disadvantage.

The handsome, bright glossy green leaves are three to five foliolate with leaflets 3 to 4 inches long. The pink or red 2-lipped flowers, produced more or less all the year round, are in axillary clusters of four to eight. The roots of the puriri never penetrate deeply into the ground, but lie near the surface, so the tree is easily blown over in a gale. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 350.*)

For previous introduction, see S. P. I. No. 47881.

55621. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. **Yerba maté.**

From Buenos Aires, Argentina. Plants presented by D. S. Bullock, agricultural commissioner, Bureau of Agricultural Economics, United States Department of Agriculture. Received August 9, 1922.

A small, bushy evergreen tree with alternate serrate leaves, native to Brazil and Paraguay and the neighboring countries. The leaves are roasted and ground to make the Paraguay tea of commerce, which is said to possess the desirable properties of tea and coffee without their injurious aftereffects.

For previous introduction, see S. P. I. No. 55489.

55622. DATURA LEICHHARDTII F. Muell. Solanaceæ.

From Brisbane, Queensland. Seeds presented by C. T. White, Government botanist. Received August 9, 1922.

Introduced for the use of geneticists working on the chromosome behavior of this genus.

A tall coarse herb with irregularly toothed oval leaves 3 to 4 inches long, pale yellowish white flowers about 3 inches in length, and very prickly globular capsules about an inch in diameter. The plant is native in northern Australia. (Adapted from *Bentham, Flora Australiensis, vol. 4, p. 468.*)

55623. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Christiania, Norway. Presented by Dr. N. Wille, director, Botanic Garden. Received August 8, 1922.

"This strain of timothy is from Lierfoss, Norway, where seed culture has been carried on for 20 years." (*Wille.*)

Locally grown seed introduced for timothy breeding experiments.

55624. CITRUS sp. Rutaceæ.

From Johannesburg, Transvaal. Seeds presented by Col. A. J. Bester. Received August 15, 1922.

"When I visited the great Symbabian ruins in central Africa in 1911 I discovered a new citrus fruit; I collected seeds and brought them back, and now the variety is distributed all over the Transvaal. The smooth-skinned fruits are much like a big lime in shape and the abundant fine-flavored juice is very sweet." (*Bester.*)

55625. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratiussima* Gaertn. f.)

From Honolulu, Hawaii. Budwood presented by Gerrit P. Wilder. Received August 16, 1922.

Wilder. Grown by Gerrit P. Wilder at his residence in Honolulu, a seedling from the Guatemalan variety *McDonald* growing at 1402 Punahou Street, Honolulu. An account of the introduction of the *McDonald* from Guatemala is given in Bulletin 25, p. 43, Hawaii Agricultural Experiment Station, as follows:

"About 20 years ago Admiral Beardsley, leaving Guatemala for Hawaii, carried with him a number of avocados for consumption on the way. He saved two seeds, wrapping them in cotton wool and packing them in ice. Arriving in Honolulu, he gave one seed to Judge Wiedeman and the other to Mrs. E. K. Wilder. The former was planted at 1402 Punahou Street, now occupied by 'The McDonald,' and although both seeds grew, the 'McDonald' is far superior in quality and blooms earlier."

A formal description of the fruit of the *Wilder* variety is as follows:

Form nearly round; size large, average weight about 1 pound; stem thick, tough; apex broadly rounded; surface light olive green; flesh yellow, shading into light green near the skin and easily separated from the latter, oily, rich and nutty in flavor; season October to January in Honolulu.

The tree is vigorous, inclined to grow upward rather than to branch out, but can stand pruning. The variety is valuable as a late avocado.

An analysis of the fruit (analysis 1747, University of California, 1915) is as follows: Weight (in ounces)—fruit, 25.70; seed, 6.42; skin, 2.54; edible portion, 16.88. Analysis of edible portion (per cent)—protein, 1.31; fat, 15.87; ash, 0.86; carbohydrates, 5.15.

55626 to 55632.

From the island of Hainan, China. Seeds presented by the Canton Christian College, through F. A. McClure. Received August 14, 1922. Quoted notes by Mr. McClure.

Collected by Mr. McClure in April and May, 1922. The Canton Christian College introduction numbers are in parentheses.

55626. COMBRETUM sp. Combretaceæ.

"(No. 853.) An ornamental shrub about 6 feet high, growing on open hillsides at an altitude of about 1,600 feet."

55627. DIOSPYROS sp. Diospyraceæ. **Persimmon.**

"(No. 856.) A tree 40 to 50 feet high and 2 feet in diameter, growing near the Five Finger Mountains, at an altitude of 3,300 to 5,000 feet. The fruits are eaten by the natives."

55628. FICUS sp. Moraceæ. **Fig.**

"(No. 847.) A small ornamental shrub up to 5 feet in height, collected in sandy soil at an altitude of 100 to 165 feet. The bright-red figs are edible."

55629. PANDANUS TECTORIUS Parkins. Pandanaceæ.

"(No. 858.) This plant, which sometimes reaches a height of 10 or 12 feet if unmolested, is used extensively as a hedge plant in Hainan, chiefly below an altitude of 1,000 feet. The spherical fruits, about 8 inches in diameter, are bright orange-yellow when ripe."

55630. RUBUS sp. Rosaceæ.

"(No. 848.) An edible wild berry found in sandy soil at an altitude of 100 to 165 feet."

55631. RUBUS sp. Rosaceæ.

"(No. 849.) An edible wild berry found in clay loam on hillsides at an altitude of about 3,300 feet."

55626 to 55632—Continued.

55632. CURCUMA ZEDOARIA (Bergius) Roscoe. Zinziberaceæ.

"(No. 857.) Rhizomes of 'hak sam keung' (black-hearted ginger); the flowers are rich pink, and a dark purple in the center of the leaves, as well as in the rhizome, gives the plant its name. It is found most abundantly in sandy soil in thickets and along streams and is a very promising ornamental for semitropical regions"

55633 to 55645. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ. Japanese apricot.

From Lokong, Kwangtung, China. Seeds presented by the Canton Christian College, through F. A. McClure. Received August 14, 1922. The Canton Christian College observation numbers are in parentheses.

55633. (No. 601.5–B2) *Cha Ip mui.*

55634. (No. 601.5–C) *Cha Ip mui.*

55635. (No. 601.18) *Hak Lok Tsai mui.*

55636. (No. 601.–E) *Hang mui.*

55637. (No. 601.11–B) *Hank mui chie.*

55638. (No. 601.7–C) *Hung mui.*

55639. (No. 601.6–C–C) *Ngo Shu mui.*

55640. (No. 601.19) *Sun Ngan Au mui.*

55641. (No. 601.10–C) *Tai mui.*

55642. (No. 601.20) *Tai Wang Wat mui.*

55643. (No. 601.4–C2) *Tai Wat Tsing mui.*

55644. (No. 601.4–D) *Tai Wat Tsing mui.*

55645. (No. 601.8–C) *Wang Wat mui.*

55646. MEDICAGO SATIVA L. Fabaceæ. Alfalfa.

From Peking, China. Purchased from Dr. R. G. Mills. Received August 19, 1922.

Native-grown seeds introduced for alfalfa breeding experiments.

55647 to 55668.

From Canton, China. Seeds presented by G. Weidman Groff, general director, Canton Christian College. Received May 22, 1922. Numbered September, 1922. Quoted notes by F. A. McClure, of the Canton Christian College.

The Canton Christian College introduction numbers are in parentheses. Native names romanized from the Cantonese dialect.

55647 to 55650. ALEURITES MONTANA (Lour.) Wilson. Euphorbiaceæ. Mu-oil tree.

"This is the *mu-yu shu* (literally, wood-oil tree) of southern China. It is less hardy than the tung-oil tree. *Aleurites fordii*, and 2-year-old specimens growing at Tallahassee, Fla., were killed by cold in February, 1917. The oil is practically identical with tung oil. The fruit differs from that of *A. fordii* in having an irregularly ridged surface when mature and the young leaves in being much more deeply lobed than those of that species." (*R. A. Young.*)

55647. "*Shek Lut*, or *Tung Yau Tsz.* Secured in the autumn of 1921 through Rev. F. Fritz, from Moilim, northeastern Kwangtung"

55648. "(No. 785.)"

55649. "(No. 788.)"

55650. "(No. 789.)"

For an illustration of the young tree, see Plate I.

A YOUNG SPECIMEN OF THE MU-YU SHU, OR MU-OIL TREE. (ALEURITES MONTANA (LOUR.) WILSON; S. P. I. NOS. 55647 TO 55650.)

Mu oil, yielded by the seeds of *Aleurites montana*, is practically identical in character with tung oil, obtained from *A. fordii* Hemsl. It is a valuable drying oil, used in the varnish, paint, and many other industries. The mu-oil tree is less resistant to frost than the tung-oil tree, and the specimen here shown, grown at the Live Oak Plantation, Tallahassee, Fla., was killed by the freeze of February, 1917. The leaves of young trees of this species are much more deeply lobed than those of the tung-oil tree. (Photographed by R. A. Young, Tallahassee, Fla., August 11, 1916; P19856FS.)

THE CARAMBOLA, A FAVORITE FRUIT OF SOUTHERN CHINA. (AVERRHOA CARAMBOLA L.; S. P. I. NOS. 55651 AND 55652.)

The peculiar winged fruits of the carambola are highly acid in character and are eaten by the Chinese with fish, meats, and other foods. When fully ripe they are deep yellow and sweet enough to be eaten out of hand, though they are not greatly relished in this form. The tree can be grown successfully in southern Florida, but it is too tender for cultivation in other parts of the United States. (Photographed by Wilson Popenoe at Rio de Janeiro, Brazil, March 18, 1914; P15001FS.)

AN ATTRACTIVE RELATIVE OF THE MAGNOLIAS. (MICHELIA EXCELSA BLUME; S. P. I. No. 55690.)

As ornamental plants for the warmer portions of the United States the various species of magnolias have acquired great and well-deserved popularity, and it may be expected that *Michelia excelsa*, which belongs to the same family and whose handsome flowers are here shown, will some day be widely cultivated in the southernmost parts of this country. This tall tree is native in the temperate Himalayas of northeastern India at altitudes of about 5,000 feet. The large narrow leaves are silky brown beneath, and the beautiful white flowers are 4 to 5 inches across. (Photographed by J. F. Rock in northeastern India, in 1920; P22780FS.)

55647 to 55668—Continued.

55651 and 55652. AVERRHOA CARAMBOLA L. Oxalidaceæ. **Carambola.**

"Seeds from fruits purchased in the market at Canton by a Chinese student experienced in fruits. Both are cultivated by the natives."

55651. "(No. 651.) *Yeung To.* A sweet variety eaten out of hand."

55652. "(No. 652.) *Saam Nim.* A sour variety."

For an illustration of the fruit and foliage, see Plate II.

55653. CALAMUS sp. Phœnicaceæ. **Rattan.**

(No. 659.) *Wong t'ong.* Collected in December, 1921, from the Five Finger Mountains, interior of Hainan. The long vinelike stems are gathered by natives, dried, and sold to Hakka traders, who export them from Hainan as one of the rattans of commerce."

55654. CASTANOPSIS sp. Fagaceæ.

"(No. 664.) *Kwai lan yui* (Cantonese). Collected near Hongmatsuen, a Loi village in the interior of Hainan. The nuts are used by the natives as food."

55655. CHAENOMELES sp. Malaceæ.

"(No. 650.) *Sz chuen muk kwa.* Purchased in February, 1922, on the street in Canton. The fruit is used by the Chinese in making a rice wine; it makes good jelly and has been tried successfully here at the Canton Christian College."

55656. COIX LACRYMA-JOBI L. Poaceæ. **Job's-tears.**

"(No. 685.) *I mai.* Collected in December, 1921, on the island of Hainan. According to my Chinese assistant, a species of this genus is used by the people of Shinhing, West River, Kwangtung, as fish food, and a famous brand of soft-boned fish is the result."

55657 and 55658. COLOCASIA ESCULENTA (L.) Schott. Araceæ. **Taro.**

"Tubers from the Canton market in September, 1921, and grown in the Canton Christian College gardens for one season."

55657. "(No. 780.) *Hung Nga oo* (red sprouted)."

55658. "(No. 782.) *Paak oo* (white)."

55659 to 55662. DIOSPYROS spp. Diospyraceæ.

55659 and 55660. DIOSPYROS KAKI L. f. **Kaki.**

"*Sai Paat tsz.* Obtained in September, 1921, by a Chinese student of fruits from Lohkongtung, Kwangtung."

55659. "(No. 653.)" **55660.** "(No. 654.)"

55661. DIOSPYROS LOTUS L.

"(No. 655.) *Kaau tsai.* Obtained in Lohkongtung, Kwangtung. A wild species, the pulp of which is used in Canton to make a kind of waterproofing material."

55662. DIOSPYROS sp. **Persimmon.**

"(No. 695.) *Tsz.* Collected from the Five Finger Mountains of the interior of Hainan, near the Loi village of Yiktsokmaau."

55663. MILLETTIA DIELSIANA Harms. Fabaceæ.

"(No. 662.) Collected by F. A. McClure, October 25, near Notia, island of Hainan. This promising ornamental is a shrub in the open, but becomes vinelike when grown in the shade of tall trees. The fruits are the shape and color of oranges and about 2 to 3 centimeters in diameter."

55647 to 55668—Continued.

55664. NAGEIA CUPRESSINA (R. Br.) F. Muell. Taxaceæ.
(*Podocarpus javanicus* Merr.)

"(No. 666.) *Yat poon tsung* (Cantonese). Collected in the Five Finger Mountains, interior of Hainan, in December, 1921. A large tree, becoming 50 meters (164 feet) in height and 2 meters (6½ feet) in diameter. It is a promising ornamental and possibly a timber tree."

For previous introduction, see S. P. I. No. 49546.

55665. PHOENIX sp. Phœnicaceæ. **Palm.**

"(No. 663.) A tree resembling the date palm, with edible fruit. Seeds collected near Noda, island of Hainan, November, 1921."

55666. RUBUS FIMBRIIFERUS Focke. Rosaceæ.

"(No. 657.) *She p'aau lak.* Collected in December, 1921, on open grassy hillsides near Yiktsokmaau, interior of Hainan."

A species of Rubus native to southern China, especially the vicinity of Hongkong; the oval heart-shaped densely hairy leaves are about 4 inches long. The flowers and the red hemispherical fruits appear in the axils of the lower branches. (Adapted from *Focke, Bibliotheca Botanica, vol. 72, p. 80.*)

55667 and 55668. SACCHARUM spp. Poaceæ. **Grass.**

55667. SACCHARUM ARUNDINACEUM Retz.

"(No. 644.) A very tall, promising ornamental grass, collected near Namfung, Hainan, in December, 1921."

55668. SACCHARUM SPONTANEUM L.

"(No. 690.) A promising ornamental grass collected in November, 1921, near Noda, Hainan."

55669 to 55706.

From Darjiling, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Garden. Received August 2, 1922.

55669. ACER CAMPBELLII Hook. f. and Thoms. Aceraceæ. **Maple.**

One of the principal maples of the northeastern Himalayas, where it grows at an altitude of 7,000 feet or more. The beautiful green leaves with their red stalks make this tree decidedly ornamental. The grayish white moderately hard wood is used for planking and cabinet work. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 69.*)

For previous introduction, see S. P. I. No. 47629.

55670. ALNUS NEPALENSIS D. Don. Betulaceæ. **Alder.**

The Nepal alder is a tall, sparsely branched, rapid-growing deciduous tree found in many places along streams in the temperate Himalayas. The leaves are oval or oblong, and the irregular winged nuts ripen in March. The bark is used for dyeing and tanning, and the rather soft, reddish white wood is used for making boxes. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 176.*)

For previous introduction, see S. P. I. No. 50714.

55671 to 55673. BERBERIS spp. Berberidaceæ. **Barberry.**

55671. BERBERIS INSIGNIS Hook. f. and Thoms.

A beautiful hollylike bush of erect habit, with very few spines and large shining evergreen leaves 3 to 7 inches in length. The golden yellow flowers are borne in clusters of about 15 and are followed by ovoid black berries. Native to the eastern Himalayas. (Adapted from *Hooker, Flora of British India, vol. 1, p. 111.*)

For previous introduction, see S. P. I. No. 47645.

55669 to 55706—Continued.

55672. BERBERIS NAPAULENSIS (DC.) Spreng.

An erect shrub, 3 to 20 feet high, native to the temperate Himalayas at altitudes of 4,000 to 8,000 feet. It is leafy only near the top, the leaves being 6 to 18 inches in length, with leathery leaflets. The flowers are borne in erect dense-flowered racemes, and the bitter, violet fruits are about half an inch in diameter. (Adapted from *Hooker, Flora of British India, vol. 1, p. 109.*)

For previous introduction, see S. P. I. No. 50715.

55673. BERBERIS WALLICHIANA DC.

An evergreen barberry found in forests of the temperate Himalayas at altitudes of 8,000 to 10,000 feet. The leaves are narrow and the flowers, which are borne many in a cluster, are followed by oval or oblong shining black-purple berries. (Adapted from *Hooker, Flora of British India, vol. 1, p. 110.*)

55674. BUCKLANDIA POPULNEA R. Br. Hamamelidaceæ.

A large evergreen tree, up to 80 feet in height, native to the eastern Himalayas at altitudes of 3,000 to 8,000 feet. The wood is grayish brown, close grained, and durable and is very much used in Darjiling for planking and for doors and window frames. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 545.*)

For previous introduction, see S. P. I. No. 47649.

55675. BUDDLEIA COLVILEI Hook. f. Loganiaceæ.

A shrub or small tree 15 to 20 feet high from the vicinity of Sikkim, India, where it is found at altitudes of 9,000 to 12,000 feet. The oblong toothed leaves are about 6 inches long and the crimson flowers, an inch in length, are borne in large loose terminal clusters. (Adapted from *Hooker, Flora of British India, vol. 4, p. 81.*)

55676. CEPHALOSTACHYUM CAPITATUM Munro. Poaceæ. **Bamboo.**

A bamboo from the hills of Sikkim, India, which develops strong, slender, yellow stems up to 30 feet in height. These stems are used by the natives for bows and arrows, and the leaves are considered good fodder. (Adapted from *Gamble, Manual of Indian Timbers, p. 429.*)

55677. CLEMATIS GREWIAEFLORA DC. Ranunculaceæ.

A large woody climber with densely hairy, deeply 5-lobed leaflets and many-flowered panicles of hairy, tawny yellow flowers, with oblong sepals 1½ inches long. The plant is native to the lower temperate and subtropical Himalayas at altitudes of 3,000 to 5,000 feet. (Adapted from *Johnson's Gardener's Dictionary, p. 230,* and *Hooker, Flora of British India, vol. 1, p. 6.*)

For previous introduction, see S. P. I. No. 33765.

55678. CRACCA CANDIDA (DC.) Kuntze. Fabaceæ.
(*Tephrosia candida* DC.)

A low shrub with slender velvety branches, smooth green leaves 6 to 9 inches long, with gray-silky lower surfaces, and copious terminal and lateral racemes of reddish or white flowers. The shrub is native to the more tropical of the Himalayas, ascending to 5,000 feet altitude. (Adapted from *Hooker, Flora of British India, vol. 2, p. 111.*)

For previous introduction, see S. P. I. No. 50363.

55679. ERIOBOTRYA HOOKERIANA Decaisne. Malaceæ.

A small stout-branched tree with thick leathery oblong sharply toothed leaves up to a foot in length, large panicles of small white flowers, and egg-shaped yellow fruits about three-fourths of an inch long. It is a native of the eastern Himalayas at altitudes of 6,500 to 8,000 feet. (Adapted from *Hooker, Flora of British India, vol. 2, p. 371.*)

For previous introduction, see S. P. I. No. 50717.

55669 to 55706—Continued.

55680. ERYTHRINA ARBORESCENS Roxb. Fabaceæ.

When covered with its bright-scarlet flowers this small tree is very attractive and is often planted as an ornamental, as in the streets of Darjiling. There are but few prickles on its branches, and the thin greenish leaves are often a foot in width. The strongly curved pods are about an inch wide and 6 to 9 inches long. The tree is found native in the central and eastern Himalayas at altitudes ranging up to 7,000 feet. (Adapted from *Hooker, Flora of British India, vol. 12, p. 190,* and *Gamble, Manual of Indian Timbers, p. 122.*)

For previous introduction, see S. P. I. No. 47680.

55681. HYDRANGEA ROBUSTA Hook. f. and Thoms. Hydrangeaceæ.

A very stout, nearly erect hydrangea from Sikkim, India. The short-stemmed oval leaves are coarsely toothed and the flowers, with white sepals, blue petals, and stamens, are borne in rather loose, spreading corymbs with red pedicels. (Adapted from *Curtis's Botanical Magazine, pl. 5038.*)

For previous introduction, see S. P. I. No. 50367.

55682. ILEX INSIGNIS Hook. f. Aquifoliaceæ. **Holly.**

An attractive holly from the Sikkim Himalayas, where it grows at an altitude of 7,000 feet. It forms a small tree or shrub with thick-grooved branches which are purplish when young. The leathery dark-green leaves are pinnately lobed, with the lobes spine tipped and alternately raised and depressed, so that there appears to be a double row of spiny lobes on each side. This holly has proved hardy in Ireland. (Adapted from *Gardeners' Chronicle, 2d ser., vol. 14, p. 292.*)

For previous introduction, see S. P. I. No. 47698.

55683. INDIGOFERA DOSUA TOMENTOSA Baker. Fabaceæ. **Indigo.**

A low shrubby plant with densely hairy branches and dull-green compound leaves 6 to 9 inches in length, each leaf consisting of 40 to 50 leaflets; the bright-red flowers are borne in long racemes. This attractive species is found in temperate regions of the Himalayas at altitudes of 1,000 to 5,000 feet. (Adapted from *Hooker, Flora of British India, vol. 2, p. 152.*)

For previous introduction, see S. P. I. No. 50369.

55684. JASMINUM DISPERMUM Wall. Oleaceæ. **Jasmine.**

A climbing shrub common in temperate regions of the Himalayas at altitudes of 2,000 to 8,000 feet. It bears very numerous white flowers in axillary cymes and terminal panicles, sometimes a hundred. (Adapted from *Hooker, Flora of British India, vol. 3, p. 602.*)

55685. LAUROCERASUS ACUMINATA (Wall.) Roemer. Amygdalaceæ. (*Prunus acuminata* Hook. f.) **Laurel cherry.**

A slender-branched tree 30 to 40 feet in height, with flat narrow leaves up to 7 inches long and many-flowered racemes of yellowish white flowers. The fruit is a small oval drupe. The tree is found in the central and eastern Himalayas at altitudes ranging from 5,000 to 7,000 feet. (Adapted from *Hooker, Flora of British India, vol. 2, p. 317.*)

For previous introduction, see S. P. I. No. 47705.

55686. LEYCESTERIA BELLIANA W. W. Smith. Caprifoliaceæ.

A small graceful shrub with opposite, membranous, lance-shaped leaves, and sessile, two to four flowered spikes of rosy white flowers. It is native in the Sikkim Himalayas, near the Nepal border, at an altitude of 10,000 feet; it should prove hardy in England. (Adapted from *Transactions and Proceedings of the Botanical Society of Edinburgh, vol. 24, p. 173.*)

55669 to 55706—Continued.

55687. LIGUSTRUM CONFUSUM Decaisne. Oleaceæ.

This relative of our common privet is a small tree, sometimes 40 feet in height, and is native to the mountains of northeastern India at altitudes of 3,000 to 5,000 feet. The narrow leathery leaves are sometimes as much as 3½ inches long, and the small white flowers are borne in dense panicles. (Adapted from *Hooker, Flora of British India, vol. 3, p. 616.*)

For previous introduction, see S. P. I. No. 49640.

55688. MAGNOLIA CAMPBELLII Hook. f. and Thoms. Magnoliaceæ.

A beautiful deciduous magnolia from the Himalayas, where it ascends to 8,000 feet altitude. It reaches a height of 80 feet, has very dark bark, large elliptical dark-green leaves, and white to purple flowers 10 inches in diameter. This magnolia has flowered freely in southern France and Italy. (Adapted from *Curtis's Botanical Magazine, pl. 6793.*)

For previous introduction, see S. P. I. Nos. 47714 to 47718.

55689 to 55691. MICHELIA spp. Magnoliaceæ.

55689. MICHELIA CATHCARTII Hook. f. and Thoms.

A lofty tree with magnolialike foliage and terminal white flowers about an inch in diameter. It is native in the temperate forests of the Sikkim Himalayas, where the moderately hard, dark-brown heartwood is used for planking and for making tea boxes. (Adapted from *Gamble, Manual of Indian Timbers, p. 6,* and *Hooker, Flora of British India, vol. 1, p. 42.*)

For previous introduction, see S. P. I. No. 47730.

55690. MICHELIA EXCELSA Blume.

In the temperate regions of the Himalayas, where this tree is native, it is known as the "white magnolia" and is the principal timber tree of the Darjiling Hills. The oblong leaves have silky brown lower surfaces, and the solitary white flowers are 4 or 5 inches in diameter. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 5, p. 243,* and *Hooker, Flora of British India, vol. 1, p. 43.*)

For previous introduction, see S. P. I. No. 49642.

For an illustration of the flowers of this tree, see Plate III.

55691. MICHELIA LANUGINOSA Wall.

A tall tree with narrow leaves having white, woolly lower surfaces and solitary white flowers 3 to 4 inches across. Although it is spring flowering in most places in northeastern India, where it is native, in Sikkim it is said to form a large bush which flowers in autumn. (Adapted from *Hooker, Flora of British India, vol. 1, p. 43.*)

For previous introduction, see S. P. I. No. 46089.

55692. MORUS LAEVIGATA Wall. Moraceæ. **Mulberry.**

An India mulberry which occurs wild and cultivated, though not common, in the lower Himalayas, where it forms a medium-sized tree with oval leaves up to 7 inches in length. In early spring appear the long-cylindrical, yellowish white or pale-purple fruits; these are edible, although of a rather insipid sweet flavor. (Adapted from *Atkinson, Notes on the Economic Products of the Northwestern Provinces, pt. 5, p. 83.*)

55693. PASPALUM CONJUGATUM Berg. Poaceæ. **Grass.**

A creeping perennial grass with the flowering branches sometimes as much as 3 feet tall. Originally from Dutch Guiana, this species is found in moist places in the Tropics of both hemispheres and forms extensive and close mats. (Adapted from *Contributions from the National Herbarium, vol. 18, p. 318.*)

For previous introduction, see S. P. I. No. 51189.

55669 to 55706—Continued.

55694. PICEA SMITHIANA (Wall.) Boiss. Pinaceæ. Spruce.
(*P. morinda* Link.)

The Himalayan spruce is a lofty tree found in the mountains of northwestern India at altitudes of 7,000 to 11,000 feet; the terminal, drooping pale-green cones are 4 to 6 inches long. The stiff, sharp, spirally arranged green leaves are crowded into hanging, taillike twigs when young. The wood is extensively used for rough furniture and planking. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 4.*)

For previous introduction, see S. P. I. No. 47754.

55695. PIERIS FORMOSA (Wall.) D. Don. Ericaceæ.

A beautiful evergreen Himalayan shrub with leathery finely toothed leaves and large terminal branching clusters of porcelain-white flowers. It has proved hardy in Cornwall, England. (Adapted from *Gardeners' Chronicle, ser. 2, vol. 25, p. 568.*)

55696. PRUNUS NAPAULENSIS (Seringe) Steud. Amygdalaceæ.

A small tree with narrow acuminate leaves, 4 to 6 inches long, and axillary racemes of white flowers. The drupes are about twice the size of a large pea and acid in flavor. This tree is a native of the temperate Himalayas at altitudes of 4,000 to 10,000 feet. (Adapted from *Flora and Sylva, vol. 3, p. 34.*)

For previous introduction, see S. P. I. No. 47767.

55697 to 55701. RHODODENDRON spp. Ericaceæ.

55697. RHODODENDRON ARBOREUM J. E. Smith.

This Himalayan rhododendron is variable both in its foliage and in the color of its flowers. In one form the leaves are silvery on the lower surface, while in another they are covered with a brownish red down. The bell-shaped flowers, borne in dense trusses, vary from deep crimson to pure white. The tree sometimes reaches a height of 35 feet, with a trunk 4 feet in circumference. (Adapted from *Flora and Sylva, vol. 3, p. 34.*)

For previous introduction, see S. P. I. No. 47771.

55698. RHODODENDRON CILIATUM Hook. f.

A Himalayan rhododendron, of somewhat dwarfed habit, bearing many small loose trusses of pinkish white flowers less than 3 inches wide. It rarely exceeds 6 feet in height. (Adapted from *Flora and Sylva, vol. 3, p. 35.*)

For previous introduction, see S. P. I. No. 47772.

55699. RHODODENDRON DALHOUSIAE Hook. f.

This is said to be the finest rhododendron from northeastern India, chiefly because of the great size and beauty of the fragrant flowers, which resemble those of a large lily. It is a straggling shrub, 6 to 8 feet high, with smooth dark-green leaves. The flowers, which occur in terminal clusters of three to five, are nearly 5 inches across. (Adapted from *Curtis's Botanical Magazine, pl. 4718.*)

For previous introduction, see S. P. I. No. 47773.

55700. RHODODENDRON FALCONERI Hook. f.

This shrub or tree, which sometimes attains a height of 30 feet, is a native of northeastern India. The large deep-green leaves, sometimes a foot long, and the whitish, densely clustered flowers make it a very fine ornamental. (Adapted from *Curtis's Botanical Magazine, pl. 4924.*)

For previous introduction, see S. P. I. No. 47774.

55669 to 55706—Continued.

55701. RHODODENDRON MADDENI Hook. f.

An ornamental Himalayan shrub 6 to 8 feet high. The dark-green leaves are from 4 to 7 inches long, with deep-red petioles. The large, delicate, fragrant flowers, white tinged with rose, are borne in threes at the ends of the branches. (Adapted from *Curtis's Botanical Magazine, pl. 4805.*)

For previous introduction, see S. P. I. No. 47776.

55702 and 55703. SAURAUJA spp. Dilleniaceæ.

55702. SAURAUJA FASCICULATA Wall.

A bush or small tree about 20 feet in height, native to the eastern subtropical regions of the Himalayas at altitudes of 2,000 to 4,000 feet. The long narrow leaves are quite hairy, especially beneath, and the flowers, which are first white, then pink, are borne in red-branched cymes. (Adapted from *Hooker, Flora of British India, vol. 1, p. 287.*)

55703. SAURAUJA NAPAULENSIS DC.

A moderate-sized tree with the youngest branches, leaf stems, and midribs covered with rough brown hairs; the narrow, strongly toothed leaves are up to 15 inches in length, the pink flowers are borne in many-flowered panicles, and the edible green fruits have a sweet mealy pulp. The tree is native in the temperate Himalayas at altitudes of 5,000 to 7,000 feet. (Adapted from *Hooker, Flora of British India, vol. 1, p. 286.*)

For previous introduction, see S. P. I. No. 47784.

55704. SKIMMIA LAUREOLA (DC.) Sieb. and Zucc. Rutaceæ.

An evergreen, strongly aromatic shrub, found throughout the temperate Himalayas at altitudes ranging from 6,000 to 10,000 feet. The white flowers are crowded into terminal panicles, and the red, fleshy, oval fruits are about three-fourths of an inch in length. The timber is used to make hoe and ax handles. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 3, p. 244,* and *Hooker, Flora of British India, vol. 1, p. 499.*)

For previous introduction, see S. P. I. No. 47795.

55705. SPIRAEA MICRANTHA Hook. f. Rosaceæ.

A very attractive shrub of rather lax habit, found in the eastern temperate Himalayas at altitudes of 5,800 to 10,000 feet. The narrowly ovate doubly toothed leaves are sometimes 7 inches long, and the small pale-pink flowers are borne in very long spreading panicles. (Adapted from *Hooker, Flora of British India, vol. 2, p. 325.*)

For previous introduction, see S. P. I. No. 47802.

55706. TRACHYCARPUS MARTIANUS (Wall.) Wendl. Phœnicaceæ. Palm.

A slender-trunked fan-leaved palm from temperate regions of the Himalayas, where it grows to a height of 20 to 50 feet. The unarmed trunk bears at its summit a crown of rigid leathery roundish leaves 4 or 5 feet in diameter which are cut about halfway down into narrow 2-lobed segments. The yellow flowers, followed by blue fruits, are borne on a nodding spadix about a foot in length. (Adapted from *Hooker, Flora of British India, vol. 6, p. 436.*)

For previous introduction, see S. P. I. No. 53471.

55707. TRIFOLIUM SUBTERRANEUM L. Fabaceæ.

Subterranean clover.

From Melbourne, Victoria. Seeds purchased from F. H. Brunning & Co. Received August 18, 1922.

"Experiments carried on by the United States Department of Agriculture and by State experiment stations in cooperation with this department during the years 1921 and 1922 have established the fact that this clover will survive the winter as far north as Knoxville, Tenn. At this station, as well as several others, the plants from fall seeding made some growth in the fall, held their own during the winter, and made a rapid and heavy growth early in the spring of 1922. This clover made a strong growth on sandy land at McNeill, Miss.; in this case finely ground bone meal had been used as fertilizer. Preliminary trials have been encouraging, and the department is making further tests." (*A. J. Pieters.*)

For previous introduction, see S. P. I. No. 51212.

55708. Pterocarpus sp. Fabaceæ.

From Buenos Aires, Argentina. Seeds presented by D. S. Bullock, agricultural commissioner, Bureau of Agricultural Economics, United States Department of Agriculture. Received August 17, 1922.

"(From Cierras de Vilgo, Independencia, Province of La Rioja, Argentina.) Indian name *chica*, which means 'chew forever' or 'chew always.' The seeds are eaten toasted by the Indians." (*Bullock.*)

55709. Annona diversifolia Safford. Annonaceæ. Ilama.

From Tapachula, Chiapas, Mexico. Seeds purchased through R. O. Stevenson, British vice consulate. Received August 19, 1922.

"The ilama may be termed the cherimoya of the lowlands. The cherimoya does not succeed in the Tropics unless grown at elevations of 4,000 to 6,000 feet, where the climate is cool. The ilama, on the other hand, belongs to the lowlands, but is strikingly similar in character to a good cherimoya. It is a valuable recruit and one which can not be too strongly recommended for cultivation throughout the Tropics." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 51404.

55710. Lotus uliginosus Schkuhr. Fabaceæ.

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received August 19, 1922.

A pasture plant of considerable agricultural importance, rather extensively used in New Zealand, from 10 to 15 tons of seed being sown annually. This plant prefers a wet or swampy habitat. It sold in December, 1918, at about a dollar per pound. It is saved for seed mainly in the Auckland Province, but prior to the war the greater portion was imported, mainly from Germany. This seed was exported from the latter country under the name of *Lotus villosus* or *L. uliginosus*, which are the European trade names for the *L. major* of the New Zealand seed trade. *L. major* is very variable with regard to certain characters, such as hairiness, and in consequence several botanical names have been given to the plant. There are apparently a good many different strains, but whether these breed true from seed and are good agricultural species or whether they are due either to the habitat in which they are growing or to fertilization has not yet been ascertained. (Adapted from *The New Zealand Journal of Agriculture, vol. 17, p. 347.*)

Received as *L. villosus*, which is now referred to *L. uliginosus*.

For previous introduction, see S. P. I. No. 48635.

55711. Prinsepia sinensis Oliver. Amygdalaceæ.

From Jamaica Plain, Mass. Seeds presented by Dr. C. S. Sargent, Arnold Arboretum. Received August 25, 1922.

"*Prinsepia sinensis* is a species which has been comparatively unknown to horticulturists until recent times. It is quite distinct from the Himalayan *P. utilis*, which yields a cooking oil common in India, but is closely similar to *P. uniflora*, which has been introduced by this office several times. Like *P. uniflora* it is a Chinese ornamental shrub with gray or whitish bark and small gray spines. But while *P. uniflora* has white flowers, dark-purple fruits, and thick linear-lanceolate leaves, *P. sinensis* is distinguished by yellow

flowers, deep-red fruits, and thin ovate-lanceolate leaves. The shrub is said to be somewhat hardier than *P. uniflora*. The plant is of striking habit, and the clusters of large bright-yellow flowers must make it a brilliant sight on its native Mongolian hills from Mukden to the Yaboo. It is early blooming, but at the Arnold Arboretum it bears only a few fruits." (*D. C. Peattie.*)

55712. DIOSCOREA ALATA L. Dioscoreaceæ. **Greater yam.**

From Bridgetown, Barbados, British West Indies. Tubers presented by John R. Bovell, Director of Agriculture. Received July 7, 1922.

"*Barbados Red.* The tuber has a purple inner skin, with white flesh usually tinged or mottled with purple. The vine is four angled, with rather prominent maroon wings. The leaves are opposite, broadly ovate, cordate, acuminate; veins maroon; sinus deep and narrow; petioles maroon at base and apex. In the cooked yam the purple color is pale, and the flesh is mealy and of good flavor. The tubers often weigh several pounds each and are usually somewhat cylindrical. This is a standard variety in the West Indies and should be a good market yam for this country." (*R. A. Young.*)

55713. PHYLLOSTACHYS sp. Poaceæ. **Bamboo.**

From Tangsi, Chekiang, China. Plants collected in 1907 by the late Frank N. Meyer, Agricultural Explorer of the United States Department of Agriculture. Received June, 1908. Now numbered for convenience in distribution.

"A small-growing variety not over 10 feet in height, forming dense clumps. The small wiry stems make excellent plant stakes and small fishing rods. It is quite hardy, withstanding freezing temperatures." (*Peter Bisset.*)

Originally introduced under S. P. I. No. 23233 (Meyer's No. 301), but as it does not agree at all with Meyer's note it is necessary to renumber it.

55714. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. **Barley.**

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received July 8, 1922.

"*Trabut.* A very hardy variety selected from the barleys of North Africa." (*Trabut.*)

55715 to 55717.

From Jamaica Plain, Mass. Presented by Dr. C. S. Sargent, Arnold Arboretum. Received July 5, 1922.

Seeds of the following varieties of the Japanese flowering cherry (*Prunus serrulata* Lindl.) are to be grown for trial as stocks for edible-fruited cherries.

55715. PRUNUS SERRULATA PUBESCENS Wilson. Amygdalaceæ.

A tree up to 55 feet in height, with a trunk sometimes 7 feet in circumference and leaves with pale-green lower surfaces. The white or pink single flowers are usually about four-fifths of an inch in diameter. This variety, known as *Kasumi sakura*, has the widest distribution of any of the Japanese cherries and flowers about two weeks later than *Prunus serrulata spontanea*, from which variety it differs chiefly in the slight hairiness of the leaves. (Adapted from *Wilson, Cherries of Japan, p. 31.*)

For previous introduction, see S. P. I. No. 45709.

55716. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. Amyg- [dalaceæ. **Sargent's cherry.**
(*P. sargentii* Rehder.)

This variety, the *Yama sakura* of northern Japan, is very similar to *Prunus serrulata pubescens*, except that the leaves are not hairy, and the flowers, which are pink or rose colored, rarely white, are usually a little more than an inch in diameter. It is the handsomest of all the wild cherries of eastern Asia and is the parent of several of the finest double-flowered Japanese cherries. (Adapted from *Wilson, Cherries of Japan, p. 35.*)

For previous introduction, see S. P. I. No. 46533.

55715 to 55717—Continued.

55717. PRUNUS SERRULATA SPONTANEA (Maxim.) Wilson. Amygdalaceæ.

In Japan this variety is a common wild tree in the woods and thickets from Kagoshima in the south to the Nikko region in the north, where it forms a tree over 75 feet in height with a trunk 15 feet in circumference. In habit and color of flowers this variety agrees closely with the northern *Prunus serrulata sachalinensis;* the flowers are white or pink and a little less than an inch in diameter. It is the *Yama sakura* of southern and central Japan. (Adapted from *Wilson, Cherries of Japan, p. 28.*)

For previous introduction, see S. P. I. No. 41577.

55718 to 55721.

From Likiang, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received July 3, 1922. Quoted notes by Mr. Rock.

55718. BERBERIS DICTYOPHYLLA Franch. Berberidaceæ. **Barberry.**

"(No. 3388. May 15, 1922.) A fine yellow-flowered, somewhat spiny shrub which grows on limestone soil in the Likiang Mountains at an altitude of 12,000 feet. The fruits are a brilliant red, and the shrub would make an excellent ornamental."

For previous introduction, see S. P. I. No. 49056.

55719. PRINSEPIA UTILIS Royle. Amygdalaceæ.

"(No. 3281. Lashihpa. May 10, 1922.) A spiny shrub of great ornamental value, which grows north of Talifu on limestone soil at altitudes of 8,000 to 10,000 feet. In December and January the pendent branches bear a great profusion of white flowers. A cooking oil is expressed from the seeds, which are gathered by the Chinese and native tribes."

For previous introduction, see S. P. I. No. 42623.

55720. PRUNUS sp. Amygdalaceæ. **Cherry.**

"(No. 3256. May 9, 1922.) A wild cherry which forms a large spreading tree 50 feet high with a trunk up to 2 feet in diameter; it grows at 8,500 feet altitude in forests beyond Chinho. It should be a fine tree for stock purposes; it bears large numbers of small yellow fruits."

55721. ROSA sp. Rosaceæ. **Rose.**

"(No. 3238. Lashihpa. May 10, 1922.) A fine climbing rose which grows in great profusion at 8,000 feet altitude near Likiang. It is a prolific bloomer, bearing large corymbs of flowers which are at first yellow, but become white when fully opened."

For an illustration of this rose, see Plate IV.

55722. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From London, England. Seeds presented by Walter S. Tower, American commercial attaché, London, through the Bureau of Foreign and Domestic Commerce, United States Department of Commerce. Received July 3, 1922.

Introduced for department agrostologists.

55723. MAGNOLIA CAMPBELLI Hook. *f.* and Thoms. Magnoliaceæ.

From Darjiling, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Garden. Received July 3, 1922.

A beautiful deciduous magnolia from the Himalayas, where it ascends to 8,000 feet above sea level. It reaches a height of 80 feet, has very dark bark,

A NEW WILD ROSE FROM SOUTHWESTERN CHINA. (ROSA SP.; S. P. I. NO. 55721.)

This beautiful climbing rose was discovered by J. F. Rock on a high plateau in the cooler portion of the Himalayas in southwestern China at 8,000 feet altitude. The flowers, at first yellow but later becoming a delicate creamy white, are single and are borne in large clusters. (Photographed by J. F. Rock on the Lashipa Plain, Yunnan, China, May 11, 1922; P30247FS.)

A NEW HYBRID PEAR. (PYRUS SEROTINA × COMMUNIS; S. P. I. No. 55805.)

The Van Fleet pear, a hybrid produced by the late Dr. Walter Van Fleet at Little Silver, N. J., merits the serious attention of fruit growers because the tree appears to be resistant to fire-blight and at the same time the fruit is excellent for cooking and preserving. The pear is medium to large, with golden-yellow skin and sweet whitish flesh. The tree is vigorous, with large, thick, glossy leaves. No trace of blight has appeared in the two original trees which have been growing for 10 years at the Plant Introduction Garden, Chico, Calif. (Photographed by E. L. Crandall, September 12, 1922; P27943FS.)

large elliptical dark-green leaves, and white to purple flowers 10 inches in diameter. This magnolia has flowered freely in southern France and Italy. (Adapted from *Curtis's Botanical Magazine, vol. 111, pl. 6793.*)

For previous introduction, see S. P. I. No. 47718.

55724. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Lima, Peru. Seeds presented by W. E. Dunn, acting commercial attaché, through the Department of Commerce, Washington, D. C. Received July 3, 1922.

"This Peruvian alfalfa is known as 'San Pedrana.' Sr. Carlos Alvarez Calderón, who obtained the sample for us, says that it was grown in the coast region and may be harvested every 45 days throughout the year, whereas from the ordinary variety 'del pais' only about six cuts per year can be obtained." (*Dunn.*)

Peruvian alfalfa has proved of great value in certain parts of the United States. In the hope of originating new strains which may be superior in certain respects to any now grown in this country, an effort is being made to obtain seed from as many different regions in Peru as possible. The following note is adapted from H. L. Westover, in "The Development of the Peruvian Alfalfa Industry in the United States," United States Department of Agriculture Circular 93:

As compared with common alfalfa, both types of Peruvian alfalfa are more upright, less branched, and have fewer and somewhat coarser stems and smaller crowns. In thick stands, these differences are hardly noticeable. Most of the Peruvian introductions are also characterized by rapid growth, quick recovery after cutting, and in sections having a mild climate ability to make growth in cool weather after ordinary alfalfas have ceased growing. Under such conditions the Peruvian alfalfas start growth earlier in the spring and continue later in the fall, thereby giving more cuttings each season. The principal objection advanced in times past to these alfalfas is their tendency to become somewhat woody when allowed to stand beyond the flowering stage, but this difficulty is easily obviated by earlier harvesting. Lack of hardiness will always confine the successful production of the true and smooth Peruvian alfalfas to the southern and southwestern portions of the United States, where the climatic conditions are comparatively mild. They can not be grown to advantage where the winter temperature falls below 10° F. At the present time most of the Peruvian and smooth Peruvian alfalfa in the United States is found in Arizona and California. It has also been grown to a limited extent in New Mexico, Texas, and the coastal regions of the Southeastern States. The results seem to indicate that in much of this region the common alfalfa could be replaced very profitably by the Peruvian varieties.

55725. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received July 3, 1922.

"A native apricot known as *louz*; the tree is very productive and the fruit excellent. This tree is cultivated at M'Sila, a subarid region." (*Trabut.*)

55726. FRAGARIA ROSEIFLORA Boulay. Rosaceæ. **Strawberry.**

From Chenebourg, near Geneva, Switzerland. Seeds purchased from H. Correvon, Floraire Nursery. Received July 11, 1922.

Introduced for experiments in strawberry breeding.

This is very closely allied to *Fragaria vesca*, from which it is distinguished by its round, uniformly pink petals and its roundish depressed fruits. It is found wild on the slopes of the Vosges Mountains in Alsace. (Adapted from *Bulletin de la Société de France, vol. 18, p. 92.*)

55727. CERATONIA SILIQUA L. Cæsalpiniaceæ. **Carob.**

From Bari, Italy. Budwood presented by Dr. E. Pantanelli, director, Agricultural Experiment Station. Received July 7, 1922.

"*Améle.* This is considered the best variety of carob cultivated in this province (Bari); it may be the kind with large sweet pods which has been reported to you from this region." (*Pantanelli.*)

55728. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Peradeniya, Ceylon. Seeds purchased through H. F. McMillan, Botanic Garden, Peradeniya. Received August 31, 1922.

Introduced for the purpose of establishing the mangosteen in our tropical dependencies.

"This delicious fruit is about the size of a mandarin orange, round and slightly flattened at each end, with a thick, smooth, rich red-purple rind, which, when cut, exposes the white segments lying loose in the cups. The cut surface of the rind is a most delicate pink. The separate segments are whitish and covered with a delicate network of fibers. The texture of the pulp resembles that of the plum, and the flavor is indescribably delicious." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 55496.

55729. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

From Likiang, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received August 26, 1922.

"(Nguluke, Likiang Valley. June 25, 1922.) The trees are 45 feet or more high and found in this region at altitudes of 8,000 to 9,200 feet. They are apparently free from disease and should make good stock plants. The small, sour, rich-red fruits are deliciously fragrant and are excellent for jam or for stewing." (*Rock.*)

55730. LILIUM sp. Liliaceæ. **Lily.**

From Likiang, Yunnan, China. Bulbs collected by J. F. Rock. Received August 30, 1922.

"(No. 4756. Nguluke, near Likiang. June 27, 1922.) This may be a variety of *Lilium sutchuenense.* The plant, which grows on the Likiang Range at an altitude of 11,000 feet, is about 4 feet tall, with linear-lanceolate leaves and large brightly colored reddish yellow flowers spotted with a rich purple." (*Rock.*)

55731. ORYZA SATIVA L. Poaceæ. **Rice.**

From Szemao, Yunnan, China. Seeds collected by J. F. Rock. Received August 30, 1922.

"(Szemao, Yunnan. March 11, 1922.) A bright-red rice of fine grade, called *tzu no mi* by the Chinese and sold in Szemao." (*Rock.*)

55732. PRUNUS MAJESTICA Koehne. Amygdalaceæ. **Cherry.**

From Talifu, Yunnan, China. Seeds collected by J. F. Rock. Received August 30, 1922.

"(No. 3174. Talifu, Yunnan. April 25, 1922.) A fine large tree, 60 to 70 feet in height, of *Prunus pseudo-cerasus* type, found in the foothills of Talifu at altitudes of 6,700 to 7,000 feet. The tree from which these seeds were collected had three trunks clothed with a smooth, shining, bronze-colored bark with horizontal bands speckled with white. Each trunk was over a foot in diameter, the branches were stout and erect, the foliage dark green, and the fruits small, oblong, reddish, and cherrylike in appearance." (*Rock.*)

55733. CARICA PAPAYA L. Papayaceæ. **Papaya.**

From Bangkok, Siam. Seeds presented by Lao Leng Hui, clerk, American Legation. Received September 1, 1922.

A mixed collection of papayas from Bangkok, Siam, for trial in southern Florida. The Siamese papayas are recommended by the Hon. W. P. Hunt,

former American Minister to Siam, as of unusually good quality and free from the objectionable odor which characterizes those of many other countries.

55734. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Budapest, Hungary. Presented by the Hungarian Seed Culture Co. Received August 29, 1922.

Locally grown seed introduced for timothy breeding experiments.

55735. MYRICA RUBRA Sieb. and Zucc. Myricaceæ. **Yang mae.**

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received August 31, 1922.

"The beautiful dark-purple fruits are the size of crab apples and can be eaten out of hand or made into compotes and pies. There is great variation in the habit and productivity of the trees and also in the color, size, and taste of the fruits. The trees are evergreen and thrive best on well-drained rocky terraces. The localities that will best suit them in the United States will probably be the southern sections of the Gulf Coast States and the milder parts of California. Chinese name *yang mae*." (*Frank N. Meyer.*)

For previous introduction, see S. P. I. No. 53982.

55736. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Laguna, Guatemala. Budwood collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received October, 1916. Numbered September, 1922.

This variety was not distributed along with others introduced from Guatemala in 1916–17, as no buds were saved at Washington, and only one was successfully established at Miami, where several budsticks of the original shipment were sent. For a year or more the variety was considered to be lost. When it came into bearing, less than two years after the original buds were top-worked on an old tree of the West Indian race at the Miami Plant Introduction Garden, the variety was seen to be sufficiently meritorious to justify a wider trial. In habit and character of growth it is excellent; the branches are strong, not drooping, and the growth vigorous. The fruits, which ripen at Miami in late winter and early spring, are slender pyriform, about 18 ounces in weight, dark green, with the surface somewhat rough; the skin is thick and woody and the flesh cream yellow, smooth, and free from fiber, of rich flavor and excellent quality. The seed is rather small and tight in the cavity.

The original note on this variety is as follows:

"(No. 41. Laguna, Guatemala. October 2, 1916.) Avocado No. 2. *Itzamna*. A fruit of good size, having a very small seed and flesh of good quality and ripening very early in the season. The tree does not seem to be a very heavy bearer, but it is in such condition that it is difficult to say what its behavior may be under more favorable culture.

"The parent tree is growing among coffee bushes in the finca of Don Miguel Soto, a few hundred yards from the northern shore of Lake Amatitlan, at an altitude of 3,900 feet. The soil is a heavy black loam, rich and moist. The tree is about 25 feet high, with a trunk 1 foot in diameter and a rather scanty top. The amount of fruit which it is ripening this year (1916) is not great, but the crop may be considered a fair one.

"Following is a description of the fruit:

"Form oblong-pyriform, not necked; size above medium, weight 14 to 16 ounces, length 5¼ inches, greatest breadth 3¼ inches; base rounded, with the stem insertion nearly central; stem moderately stout, 5 inches long; apex rounded; surface pebbled, light green to yellowish green, with fairly numerous yellowish dots; skin slightly less than one-sixteenth of an inch thick at base of fruit, more than one-sixteenth of an inch thick at apex, separating readily from the flesh, brittle, and granular in texture; flesh pale cream, greenish near the skin, firm, with very slight fiber markings toward the base of the fruit; flavor nutty; quality very good; seed very small, ovate-conic in form, 1¾ inches long, 1½ inches thick, with both seed coats adhering closely and tight in the cavity.

"The fruit reaches maturity by the end of September at Lake Amatitlan and is then picked for market, but the quality would doubtless be much better if it were left on the tree some time longer. In excessively wet weather the fruits fall as soon as they are mature. With less soil moisture they hang on longer." (*Wilson Popenoe.*)

55737. Tabebuia pentaphylla (L.) Hemsl. Bignoniaceæ.

From St. Croix, Virgin Islands. Seeds presented by J. B. Thompson, agronomist in charge, Agricultural Experiment Station. Received August 25, 1922.

This tree is native in the West Indies and Central America and is often cultivated as an ornamental.

"The *matiliscuate* is a handsome flowering tree found in north-central Guatemala, especially in the Valley of Salama, and commonly growing near small streams. I have seen it at altitudes of 2,000 to 3,500 feet. The tree is about 35 feet high at maturity, with a spreading crown, deciduous during the latter part of the dry season (January to March), and producing large clusters of pink flowers which make the tree a mass of color visible for some distance. Its flowering season is from January to March, and the seeds, which are produced in long slender pods, ripen in May and June.

"As an ornamental tree for cultivation in southern Florida and possibly also in California, the *matiliscuate* seems well worthy of trial. The only defect of this plant is the habit of dropping its leaves during the dry months of the year. If it flowers in the same months in Florida as in Guatemala, it should be a valuable addition to the flowering trees of that region. It thrives on heavy but rocky land and does not seem to require a large supply of water." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 44998.

55738. Paullinia cupana Kunth. Sapindaceæ. Guarana.

From Rio de Janeiro, Brazil. Seeds presented by Dr. J. Simão da Costa, through Dr. W. L. Schurz, commercial attaché of the American Embassy. Received September 6, 1922.

A stout, bushy vine found wild in Venezuela and northwestern Brazil and also cultivated in the latter country for the sake of the grapelike fruits, from which is obtained the product known as guarana. This, in the form of a black paste, has received considerable attention in the pharmaceutical world in recent years as a natural source of caffein.

The following analysis shows the composition of guarana:

	Per cent.		Per cent.
Caffein	5.388	Starch	9.350
Essential oil	2.950	Glucose	.777
Resin	7.800	Pectic acid, malic acid, dextrin, etc	7.470
Coloring matter	1.570	Vegetable fiber	49.125
Saponin	.060	Water	7.650
Guarana-tannic acid	5.902		
Pyro-guarana acid	2.750		

Owing to the fact that guarana is so rich in caffein, a small dose enables a man to endure extraordinary hardship, and taken sparingly it is said to be excellent for intestinal trouble.

The Mauhe district in Para, Brazil, produces about 25 tons of guarana paste annually, and the cultivation of the plant has recently been begun in the States of Goyaz and Rio de Janeiro. A number of new and successful pharmaceutical compounds contain this product. (Adapted from *Bulletin of the Pan American Union, vol. 51, p. 268.*)

55739 to 55747.

From Avondale, Auckland, New Zealand. Budwood and trees presented by H. R. Wright. Received September 13, 1922. Quoted notes by Mr. Wright.

55739 to 55747—Continued.

55739 to 55742. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

55739. "Dormant buds of *Kings Seedling*. A white-fleshed clingstone variety, with the skin uniformly of a beautiful red."

55740. "Dormant buds of *Sunrise*. One of the earliest varieties, of high color and superb quality. The tree is sturdy, close jointed, and a good cropper."

55741. "Dormant buds of *Watts Early*. A variety that might be suitable for Florida because of its short resting period. It starts its growth nearly a month before any other variety; consequently should not be planted in districts subject to late frosts. The ripening season is extra early."

55742. "*White Cling*. Tree belonging to a variety found growing near a native hut in the Coromandel district. It is said to bear heavy crops of fine-flavored, very juicy fruits."

55743. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Orange.**

"*Groverly Navel*. Trees of a Queensland variety with fruits of large size. This variety is an enormous cropper and well worth a trial."

55744. MALUS SIEBOLDII (Regel) Rehder. Malaceæ.

"Selected trees which are aphis resistant, but not suitable as stock plants, lacking affinity. They are essentially ornamentals, having very pretty foliage and being very handsome while in fruit."

55745 to 55747. PRUNUS SALICINA × CERASIFERA. Amygdalaceæ. **Hybrid plum.**

55745. "Dormant buds of *Ford's Early*(?)."

55746. "Dormant buds of *Ford's Early*. A hybrid plum which is early ripening and a good cropper."

55747. "Dormant buds of *Norris Early*. Said to be a hybrid plum."

55748 to 55750.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received September 12, 1922.

55748. INDIGOFERA DOSUA TOMENTOSA Baker. Fabaceæ. **Indigo.**

For previous introduction and description, see S. P. I. No. 55683.

55749. MIMOSA RUBICAULIS Lam. Mimosaceæ.

A large, straggling, prickly shrub found throughout the greater part of India, ascending to 5,000 feet in the western Himalayas. The leaves, seeds, pods, and powdered roots are used by the natives medicinally. It is said to make a very satisfactory hedge plant. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 5, p. 249.*)

For previous introduction, see S. P. I. No. 47734.

55750. NICOTIANA SYLVESTRIS Speg. Solanaceæ. **Tobacco.**

An ornamental tobacco from Argentina which has the double merit of large handsome leaves and a free-flowering habit. Its white sweet-scented flowers are very attractive, but should be shaded from the direct rays of the midday sun. (Adapted from *The Gardeners' Magazine, vol. 52, p. 48.*)

For previous introduction, see S. P. I. No. 42344.

55751 to 55753.

From Mili, Szechwan, China. Tubers and bulbs obtained by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received September 12, 1922.

55751 to 55753—Continued.

55751 and 55752. LILIUM spp. Liliaceæ. **Lily.**

55751. LILIUM sp.

"(July, 1922.) A tall plant with purplish white flowers borne in twos or threes; collected in the mountains."

55752. LILIUM sp.

"(No. 5054. July 12, 1922.) A rather rare species with pink flowers speckled with purple, found in the mountains at an altitude of 12,000 feet."

55753. (Undetermined.)

"(No. 5053. July, 1922.) Tubers collected in the mountains."

55754. HYPERICUM CANARIENSE L. Hypericaceæ.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received September 15, 1922.

"A small graceful tree with drooping branches, which will grow on the driest and poorest of soils. The wood is the strongest I have ever seen: it is almost impossible to drive a nail into it. The boys here use its thin straight stems as net handles, all other kinds of wood breaking under the strain of pushing the net through the water. I should think that such remarkably strong wood which can be produced on such poor soil would have a practical value." (*Proschowsky.*)

For previous introduction, see S. P. I. No. 47581.

55755. RUBUS sp. Rosaceæ. **Blackberry.**

From San Jose, Costa Rica. Seeds collected by Edward Goucher, Plant Propagator, Bureau of Plant Industry. Received September 14, 1922.

"The fruits of this species of Rubus were collected at Paraiso, near San Jose, Costa Rica. The plants grew along the roadside and were from 6 to 8 feet in height. The fruits, which were produced in abundance, were about 1 inch in length and very firm in texture, but of poor flavor." (*Goucher.*)

55756 to 55761.

From Yunnan, China. Collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received September 11, 1922. Quoted notes by Mr. Rock.

55756. LILIUM sp. Liliaceæ. **Lily.**

"(No. 4931. Likiang. July 7, 1922.) Bulbs of a beautiful lily with thick, oval, alternate leaves which are far apart. The single terminal flower has rich pink reflexed petals spotted with dark purple. This rare plant grows on the edge of pine forests of the Likiang Snow Range at an altitude of 12,000 feet. This may be only a variety of *Lilium duchartrei*, but it is a decidedly handsome plant."

55757 to 55761. PRUNUS spp. Amygdalaceæ.

Seeds of the following wild cherries and plums:

55757. PRUNUS sp. **Cherry.**

"(Likiang. July 6, 1922.) A smaller tree than the following [No. 4858, S. P. I. No. 55758]; the fruits also are smaller, globose, and dark red. It grows in the Likiang Snow Range at an altitude of 12,000 feet. The tree is apparently free from any disease."

55758. PRUNUS sp. **Cherry.**

"(No. 4858. Likiang. July 6, 1922.) A fine looking cherry tree, 35 to 40 feet in height, which grows at an altitude of 12,000 feet among limestone bowlders on the edge of alpine meadows on the

55756 to 55761—Continued.

Likiang Snow Range. The foliage is dark green, and the orange-red, oval-pointed, sour fruits are much sought after by birds and hence difficult to collect."

55759. PRUNUS sp. **Plum.**

"(Szemao. July, 1922.) A plum tree of fine shape, 40 to 50 feet in height, growing in the mountains at an altitude of 5,000 feet or more. The small yellow fruits, about the size of an olive, are not very sour; the flesh is scanty but quite tasty."

55760. PRUNUS sp. **Plum.**

"(Szemao. July, 1922.) A plum tree growing in the mountains at an altitude of 5,000 feet."

55761. PRUNUS sp. **Plum.**

"(Szemao. July, 1922.) A plum tree, 30 to 35 feet in height, growing in the mountains at an altitude of 5,000 feet or more. The fruit, somewhat larger than an olive, is yellow, hard, and sour. Owing to its freedom from disease and prolific bearing, this species, as well as the two preceding ones, should be suitable for stocks."

55762. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received September 6, 1922.

For previous introduction and description, see S. P. I. No. 55728.

55763. ACANTHOSICYOS HORRIDA Welw. Cucurbitaceæ.

From Louws Creek, Eastern Transvaal, Union of South Africa. Seeds presented by E. B. Edwards. Received September 14, 1922.

"*Narras.* A remarkable cucurbitaceous plant which grows on the dunes of the Namib, where subterranean waters exist. The plant subsists even when this water is at great depths. It forms thorny thickets on the sand hills of Southwest Africa and is adapted to a hot, dry climate, with little or no rainfall. The fruit is the size of an ostrich egg. Both the pulp and seeds are used as food by the natives. The fruits are produced in abundance, and for about four months of the year the more primitive Hottentots are said to survive with practically no other source of food or water. The fruits are eaten and water is obtained from them. The seeds when ripe are plump, about the size of watermelon seeds.

"The plant is one which should be of great value to our Indians of the Southwest if once established on the sand dunes of Arizona and southern California. It is doubtful whether any plant can be obtained which seems offhand to give greater promise in that region than does this cucurbit." (*H. L. Shantz.*)

For previous introduction, see S. P. I. No. 55486.

55764 and 55765. PRUNUS SEROTINA Ehrh. Amygdalaceæ. **Capulin.**

From the city of Guatemala, Guatemala. Seeds presented by Sr. Jorge Garcia Salas, Director General of Agriculture. Received August 17, 1922.

"In Guatemala this tree is found throughout the highlands generally, sometimes as a semicultivated plant, sometimes as a wild species, or at least having the appearance of one. Its zone of cultivation lies between 4,000 and 9,000 feet. The Kiche Indians who live near Quezaltenango know the fruit as 'tup' and distinguish two varieties—the 'ek-i-tup' (red tup) and the 'sak-i-tup' (white tup), the latter having fruits of much lighter color than the former. The presence of a name for this fruit in the Kiche language argues an ancient cultivation in the Guatemalan highlands.

"The capulin is used in the same manner as the northern cherry—for eating out of hand, for preserving, for jams, etc. In those countries where good varieties grow it is popular among all classes of people.

"There is considerable difference in flavor of the fruits from different trees of a given region where this species grows, some of the fruits being disagreeably bitter, while others are sweet, pleasant, and altogether delicious. It is these latter which must be sought out and propagated if the possibilities of the capulin are to be fully realized and if it is to become eventually, as we confidently believe it will, a popular fruit throughout the subtropical regions of the entire world." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 41328.

55764. "A bitter cherry from cool regions of Chimaltenango." (*Garcia Salas.*)

55765. "A sweet cherry from cool regions of San Martin Jilotepeque." (*Garcia Salas.*)

55766 to 55768. CUCUMIS spp. Cucurbitaceæ.

From Burringbar, New South Wales. Seeds presented by B. Harrison. Received September 14, 1922. Quoted notes by Mr. Harrison.

55766. CUCUMIS MELO L. **Muskmelon.**

"Seeds of the Australian casaba which I believe originally came from India. It is a most prolific plant, bearing cream-colored fruit about the size of a cucumber. It is sometimes called the 'apple melon' and is quite popular here, being very palatable when eaten with sugar or made up into pies. It is hardy, prolific, early, and should thrive well throughout the United States."

For previous introduction, see S. P. I. No. 46029.

55767 and 55768. CUCUMIS SATIVUS L. **Cucumber.**

55767. "*Mammoth.* This cucumber grows to a very large size, almost as large as a medium-sized vegetable marrow, and keeps well. The flesh is very firm, crisp, and sweet."

For previous introduction, see S. P. I. No. 48156.

55768. "*Harrison's Giant.* Grows to a length of 3 feet and is well flavored. This variety has been evolved through careful selection and cultivation."

55769. CARAGANA PYGMAEA (L.) DC. Fabaceæ. **Dwarf pea tree.**

From Indian Head, Saskatchewan, Canada. Seeds presented by Norman M. Ross, Forestry Branch, Nursery Station, Indian Head. Received September 15, 1922.

A handsome shrub with small leaves and yellow flowers, which grows spontaneously in hilly places in the southern provinces of Russia, and in great abundance in the region south of Lake Baikal. In cultivation it rarely exceeds 4 feet, but in its wild state it is often 6 feet high with a stem 2 inches thick. The bright-yellow shoots when old are long and flexible and are made into flyflaps. The shoots are much tougher than those of any of our cultivated osiers and are better suited for tying. The hard dull-brown wood is streaked with red and is well adapted for veneering. (Adapted from *Edward's Botanical Register, vol. 12, p. 1021.*)

For previous introduction, see S. P. I. No. 52698.

55770. LILIUM sp. Liliaceæ. **Lily.**

From Mili, Szechwan, China. Bulbs collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received September 15, 1922.

"(No. 5051. Mili. July 10, 1922.) A lily related to *Lilium duchartrei*, with large racemes of white flowers; the petals are reflexed and sprinkled with purple. The bulbs were collected in southwestern Szechwan, in the mountains of the Lama Kingdom." (*Rock.*)

55771 to 55774.

From Komaba, Tokyo, Japan. Seeds presented by Prof. M. Shirai, Botanical Institute, College of Agriculture, Komaba. Received September 19, 1922.

55771 and 55772. ELAEAGNUS MULTIFLORA Thunb. Elæagnaceæ. **Gumi.**

A very attractive white-flowered Japanese shrub about 6 feet in height. The lower surface of the oval leaves is silvery white and the dull-red oval fruits, about an inch in length, are much relished for their brisk tart flavor, being excellent for preserves. (Adapted from *The Florists' Exchange, vol. 38, p. 185.*)

55771. *Ogumi.* **55772.** *Togumi.*

55773 and 55774. RUBUS spp. Rosaceæ.

These native Japanese species of Rubus are introduced for breeding experiments.

55773. RUBUS INCISUS Thunb.

An erect shrubby species with purplish stems, few spines, heart-shaped leaves, and solitary axillary white flowers. (Adapted from *Thunberg, Flora Japonica, p. 216.*)

55774. RUBUS MICROPHYLLUS L. f.
(*R. palmatus* Thunb.)

A much-branched shrub with slender climbing branches, scattered recurved prickles, roundish five or six lobed bright-green leaves, solitary axillary pure-white flowers, and yellow juicy fruits nearly an inch in diameter. (Adapted from *Curtis's Botanical Magazine, pl. 7801.*)

55775 to 55787.

From China. Collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received September 21, 1922. Quoted notes by Mr. Rock.

55775 and 55776. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

55775. "(Near Puerhfu, Yunnan. July, 1922.) Seeds of a tree 40 feet in height, which is a prolific bearer. The fruits are unusually fine, although small; they are juicy and of a delicious strawberry-like flavor, freestone, and with a strawberry-red surface."

55776. "(Puerhfu, Yunnan. July 10, 1922.) Seeds from large trees growing wild in the mountains 30 li [about 8 miles] from Puerhfu at an altitude of 5,000 feet. The fruits are large, freestone, quite juicy, and of good flavor."

55777. ARISAEMA sp. Araceæ.

"(No. 5053. Mili, Szechwan. July 12, 1922.) Tubers of an aroid of great beauty collected in the mountains. The large spathe is white, with a tinge of pale green toward the apex."

55778 to 55780. LILIUM spp. Liliaceæ. **Lily.**

55778. LILIUM sp.

"(Likiang, Yunnan. July, 1922.) Bulbs of a lily with red stems, dark-green leaves, and yellowish red flowers; the reflexed petals are spotted with purple. This lily was found on the western slope of the Likiang Snow Range at an altitude of 14,000 feet."

55779. LILIUM sp.

"(Likiang, Yunnan. July 20, 1922.) Bulbs of a small lily with single white flowers; found on the Likiang Snow Range at an altitude of 14,000 feet."

55775 and 55787—Continued.

55780. LILIUM sp.

"(Likiang, Yunnan. July, 1922.) Bulbs of a lily with red stems and thick, fleshy, light-green leaves, collected on the eastern slope of the Likiang Snow Range at an altitude of 14,000 feet. The yellowish green flowers are marked with purple stripes."

55781 to 55784. PRUNUS spp. Amygdalaceæ.

55781. PRUNUS TOMENTOSA Thunb. **Bush cherry.**

"(Likiang, Yunnan. July 18, 1922.) Seeds of a shrubby cherry which grows on the Yunnan-Szechwan border about five days' journey north of Likiang in the scrub forests near Fengkow, not far from the Yangtze River, at an altitude of 11,000 feet. The plant is 8 to 10 feet high, with a gray pubescence, branching from the base and forming a large round bush. It is a most prolific bearer, and in the latter part of July is loaded with the oval orange-yellow cherries of a sweetish sour flavor."

55782. PRUNUS sp. **Cherry.**

"(No. 5052. Mili, Szechwan. July 10, 1922.) Seeds of a fine spreading tree 35 to 40 feet in height, collected in the mountains at an altitude of 12,000 feet. The small oval red fruits have very small seeds. The tree should make a good stock plant."

55783. PRUNUS sp. **Plum.**

"(Near Puerhfu, Yunnan. July, 1922.) Seeds of a fine tree which bears bright-yellow, very juicy fruits of a mild, sweet flavor, the size of a small apple. This species could doubtless be improved."

55784. PRUNUS sp. **Plum.**

"(Near Puerhfu, Yunnan. July, 1922.) Seeds of a tree 35 to 40 feet high, with bright-yellow, slightly bitter fruits the size of a small walnut."

55785 to 55787. RUBUS spp. Rosaceæ. **Raspberry.**

55785. RUBUS sp.

"(Likiang, Yunnan. July, 1922.) Seeds of a rambling shrub collected on the Likiang Snow Range at an altitude of 15,000 feet in exposed situations covered with snow in winter and early spring. The entire plant is woolly white and slightly spiny, and the leaves are snow white beneath. The fruits, the size of a thimble, have a sweet, delicious flavor, and the individual drupelets are large and transparent."

55786. RUBUS sp.

"(Likiang. July 20, 1922.) Seeds of a climbing shrub, with leaves silvery beneath and green above, growing on the Likiang Snow Range at an altitude of 13,000 feet. The orange-red berries have a sweet subacid flavor and attractive color."

55787. RUBUS sp.

"(Likiang. July 20, 1922.) Seeds of a shrub 5 to 6 feet high, collected on the slopes of the Likiang Snow Range at an altitude of 13,000 feet. The small leaves are green on both sides, and the scarlet berries are sweet and very palatable."

55788. RUBUS GLAUCUS Benth. Rosaceæ. **Andes berry.**

From Guatemala. Seeds presented by B. M. Young, Morgan City, La. Received September 25, 1922.

"The Andes berry occurs as a wild plant from Mexico to Ecuador. It is a vigorous raspberrylike plant, bearing maroon-colored fruits which resemble Logan blackberries in flavor, but are sweeter. It can probably be culti-

vated on the Pacific coast and in the Gulf States. A full description of the plant, its cultivation, and uses may be found in the Journal of Heredity, vol. 12, pp. 387–393, November, 1921." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 52734.

55789. RHEUM RHAPONTICUM L. Polygonaceæ. **Rhubarb.**

From Ottawa, Canada. Crowns presented by Prof. T. F. Ritchie, Department of Horticulture, Central Experimental Farm. Received September 28, 1922.

"A new variety of rhubarb of very fine quality; it has a slender purplish stalk." (*W. A. Orton.*)

55790. CALLIANDRA TERGEMINA (L.) Benth. Mimosaceæ.

From Dominica, British West Indies. Seeds presented by Joseph Jones, curator, Botanic Gardens, Dominica. Received September 22, 1922.

"Seeds of a small native tree known locally as *bois ravine;* it makes a good hedge plant and is very pleasing when in flower. (*Jones.*)

A beautiful leguminous shrub of the habit of the mimosas, but thornless, with compound leaves composed of six leaflets arranged characteristically in two groups of three each. The long purple filaments of the dense axillary flower heads make this shrub a very pleasing ornamental. (Adapted from *Plumier, Plantarum Americanarum, ed. Burmann, pl. 10.*)

55791. OSYRIS ALBA L. Santalaceæ.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received September 23, 1922.

"This is a small evergreen bush which is very ornamental when loaded with its red fruits. It grows in very dry poor soil." (*Proschowsky.*)

A small upright shrub 3 feet high, widely distributed throughout the Mediterranean region. It has stiff, narrow, yellowish green leaves, small axillary greenish yellow flowers, and small red fruits. The roots and fruit possess astringent properties. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 247.*)

55792 to 55795.

From Freetown, Sierra Leone, West Africa. Seeds presented by Prof. William N. Martin, Albert Academy, Freetown. Received September 25, 1922.

55792. CUCUMEROPSIS MANNII Naud. Cucurbitaceæ. **Kiffy.**

A cucurbitaceous yellow-flowered climbing vine from tropical Africa.

"The gourdlike fruits, about the size and shape of a goose egg, are produced on vines like that of the ordinary gourd. The seeds when parched and ground produce a delicious condiment, and kiffy seed is an important ingredient in the popular Liberian dish called dumboy. The flavor of the parched seed is similar to that of the parched seeds of *Sesamum indicum,* which are used in the same manner by the natives of Liberia. The seeds are obtained by macerating the fruits in water and washing them free from the pulp. This plant probably would mature its fruits only in the extreme southern United States." (*G. N. Collins.*)

For previous introduction, see S. P. I. No. 31365.

55793 and 55794. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

55793. *Cush Cush.* Seeds yellow.

55794. *Cush Cush.* Seeds red.

55795. ORYZA SATIVA L. Poaceæ. **Rice.**

"Temne rice, the sweetest in Sierra Leone." (*Martin.*)

55796. GUILIELMA UTILIS Oerst. Phœnicaceæ. **Pejibaye.**
(*Bactris utilis* Benth. and Hook.)

From San Jose, Costa Rica. Plants purchased through Oton Jimenez. Received September 15, 1922.

A shipment of plants of the pejibaye. For an extended account of this interesting food palm, see the Journal of Heredity, vol. 12, pp. 154-166, April, 1921.

For previous introduction and description, see S. P. I. No. 54776.

55797 to 55804.

From Harbin, Manchuria. Seeds presented by G. C. Hanson, American consul, Harbin. Received September 25, 1922. Quoted notes by Mr. Hanson.

"The following collection of farm products grown in the Provinces of Heilungchiang and Kirin, Manchuria, was prepared for a world's farm exhibit to be held in Lagrange, Ind., in October, 1922. The seeds are all of the 1921–22 crop."

55797. CANNABIS SATIVA L. Moraceæ. **Hemp.**

"A variety of hemp grown at Anda."

For previous introduction, see S. P. I. No. 44712.

55798. FAGOPYRUM VULGARE Hill. Polygonaceæ. **Buckwheat.**
(*F. esculentum* Moench.)

"Buckwheat from Anda."

55799. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"Kaoliang from Tzitzikar."

55800. LINUM USITATISSIMUM L. Linaceæ. **Flax.**

"Siberian linseed from the Ussurisk Railway district."

55801. PANICUM MILIACEUM L. Poaceæ. **Proso.**

"Red millet from Tzitzikar."

55802. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

"North Manchurian soy beans; average quality from the River Sungari district."

55803. TRITICUM AESTIVUM L. Poaceæ. **Common wheat.**
(*T. vulgare* Vill.)

"Manchurian wheat; 124/125 Zolotnika natural weight; from Anda."

55804. ZEA MAYS L. Poaceæ. **Corn.**

"A yellow variety of maize from Anda."

55805. PYRUS SEROTINA × COMMUNIS. Malaceæ. **Van Fleet pear.**

Trees grown at the Plant Introduction Garden, Chico, Calif., under P. I. G. No. 6583. Numbered September, 1922.

"A hybrid pear raised by the late Dr. Walter Van Fleet at Little Silver, N. J., and presented to the Plant Introduction Garden in 1909. Promising as a blight-resistant cooking and preserving pear for sections where fire-blight is destructive.

"Origin, Little Silver, N. J. A hybrid probably between Golden Russet, an oriental pear, and one or more of the *communis* types. Medium to large, roundish, obovate; skin golden, covered with numerous small round dots; stalk long, stout; cavity around stalk quite shallow or none at all; basin at the calyx end more or less abrupt, deep, russet; flesh whitish, sweet, slightly subacid, granular; core medium; seeds few, large; not gritty.

"A handsome golden colored pear which when properly ripened makes a fine baking and preserving fruit. The trees are strong and vigorous with large,

thick, glossy leaves. The two original trees have been grown at Chico for more than 10 years and no trace of blight has appeared. J. E. Morrow, superintendent of the Chico garden, who has watched this pear carefully for a number of years, says that it is a splendid cooking pear and that after being cooked it tastes something like pineapple. He further says that, owing to its extreme vigor, size, hardiness, immunity to blight, and heavy cropping qualities, he believes the pear has much promise. He regards it as much better than Kieffer or LeConte and is of the opinion that it should be thoroughly tested, especially in the Southern States." (*B. T. Galloway.*)

For an illustration of this fruit, see Plate V.

55806. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Sydney, New South Wales. Seeds presented by George Valder, Department of Agriculture. Received September 29, 1922.

Locally grown timothy introduced for comparison and cultural experiments.

For previous introduction, see S. P. I. No. 55480.

55807. GUILIELMA UTILIS Oerst. Phœnicaceæ. **Pejibaye.**
(*Bactris utilis* Benth. and Hook.)

From San Jose, Costa Rica. Seeds collected by Edward Goucher, Plant Propagator, Bureau of Plant Industry. Received September 19, 1922.

For previous introduction and description, see S. P. I. No. 55796.

55808 to 55811.

From Buitenzorg, Java. Seeds presented through Carl Hartley. Received September 23, 1922. Quoted notes by Mr. Hartley.

55808 to 55810. ARACHIS HYPOGAEA L. Fabaceæ. **Peanut.**

Presented by the Java Department of Agriculture.

"All of these peanuts mature in 100 days, or, according to the natives, in three months."

55808. "(No. 24 M.) *Broel.* This is a dominantly 3-seeded red-skinned peanut from East Java. It is moderately wilt resistant."

55809. "(No. 74.) *Paarse Holle.* This variety is named for its dark-red seed skin. It is mostly two seeded with some 3-seeded pods and is moderately wilt resistant."

55810. "(No. 71.) *Toeban.* This is grown by the Selectietuin here as their most productive strain. Unlike some of the kinds named 'Toeban' in other places, it has a white seed skin. Of the early-maturing strains, with one exception, it is the most resistant to the locally prevalent wilt, *Bacterium solanacearum.* It is of the bunch type, easily handled and harvested.

55811. CASTANOPSIS ARGENTEA (Blume) A. DC. Fagaceæ. **Chestnut.**

"(April, 1922.) An edible chestnut obtained from the head forester at Palembang, Sumatra."

An evergreen tree 50 to 60 feet high, with narrow, thin leaves 5 to 7 inches long, and very spiny dense clusters of burs; each bur is about 2 inches wide and contains normally a single nut an inch in diameter. (Adapted from *Hooker, Flora of British India, vol. 5, p. 621.*)

For previous introduction, see S. P. I. No. 52533.

55812. MANGIFERA ALTISSIMA Blanco. Anacardiaceæ.

From Manila, Philippine Islands. Budwood presented by Sr. Adn. Hernandez, director, Bureau of Agriculture. Received September 6, 1922.

A Philippine relative of the mango, which is found wild from northern Luzon to southern Mindanao, where it forms a large tree, sometimes reaching a height of 116 feet. The tree is not cultivated, although the mangolike, smooth, green or yellowish fruits, 2 to 3 inches long, are used for making pickles. The

leaves are long, narrow, and pointed at both ends, and the small, fragrant, white flowers are borne in large numbers in branched clusters. (Adapted from *W. H. Brown, Wild Food Plants of the Philippines, p. 94.*)

55813. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From the Plant Introduction Garden, Chico, Calif. A sucker from the stock plant on which was budded *Amygdalus tangutica*, S. P. I. No. 41709. Numbered September, 1922, for convenience in distribution.

"This tree has matured a very good crop of exceptionally fine freestone peaches. The fruit is yellow with red cheeks, in shape slightly flattened at the ends and bulging in the center, in size about 3 inches in diameter and 2¾ inches long. The basin is wide and shallow, the suture rather indistinct. The flesh is yellow, very juicy, of extra fine quality, and very red at the pit, which is rather large, rough, and deeply corrugated. Average weight about 6½ ounces. A number of persons who have sampled this peach have pronounced it superb. It compares favorably with *Late Crawford* and is about a week later than *Elberta*. It is not as coarse in texture as the latter." (*J. E. Morrow.*)

INDEX OF COMMON AND SCIENTIFIC NAMES.

Acanthosicyos horrida, 55763.
Acer campbellii, 55669.
Alder, *Alnus nepalensis*, 55670.
Aleurites montana, 55647–55650.
Alfalfa, *Medicago sativa*, 55569–55571, 55586, 55646, 55724.
Alnus nepalensis, 55670.
Amygdalus persica, 55739–55742, 55775, 55776, 55813.
Andes berry, *Rubus glaucus*, 55788.
Annona diversifolia, 55709.
Apricot, *Prunus armeniaca*, 55725, 55729.
  Japanese, *Prunus mume*, 55633–55645.
Arachis hypogaea, 55808–55810.
Arisaema sp., 55777.
Averrhoa carambola, 55651, 55652.
Avocado, *Persea americana:*
  Itzamna, 55736.
  Wilder, 55625.

Bactris utilis. See *Guilielma utilis*.
Bamboo, *Cephalostachyum capitatum*, 55676.
  Phyllostachys spp., 55582, 55583, 55713.
Banana, *Musa* spp., 55592, 55593.
Barberry. See *Berberis* spp.
Barley, Trabut, *Hordeum vulgare pallidum*, 55714.
Bean, mung, *Phaseolus aureus*, 55573, 55574.
  soy, *Soja max*, 55802.
Berberis dictyophylla, 55718.
  insignis, 55671.
  napaulensis, 55672.
  wallichiana, 55673.
Blackberry, *Rubus* sp., 55755.
Bowenia spectabilis, 55607.
Bucklandia populnea, 55674.
Buckwheat, *Fagopyrum vulgare*, 55798.
Buddleia colvilei, 55675.

Calamus sp., 55653.
Calliandra tergemina, 55790.
Callitris whytei, 55602.
Cannabis sativa, 55797.
Capulin, *Prunus serotina*, 55764, 55765.
Caragana pygmaea, 55769.
Carambola, *Averrhoa carambola*, 55651, 55652.
Carica papaya, 55733.
Carob, Améle, *Ceratonia siliqua*, 55727.
Cassia laevigata, 55599.
Castanopsis sp., 55654.
  argentea, 55811.
Cephalostachyum capitatum, 55676.
Ceratonia siliqua, 55727.
Chaenomeles sp., 55655.
Cherry, *Prunus* spp., 55720, 55757, 55758, 55782. *P. majestica*, 55732.
  bush, *P. tomentosa*, 55781.
    P. tomentosa endotricha, 55608.
  Japanese flowering, *P. serrulata*, 55587.
    P. serrulata pubescens, 55715.
    P. serrulata spontanea, 55717.
  laurel, *Laurocerasus acuminata*, 55685.
  Sargent's, *P. serrulata sachalinensis*, 55716.
Chestnut, *Castanopsis argentea*, 55811.
Chica, *Pterocarpus* sp., 55708.
Citrus sp., 55624.
  australasica. See *Microcitrus australasica*.
  sinensis, 55743.
Clausena lansium, 55598.
  wampi. See *C. lansium*.
Clematis grewiaeflora, 55677.
Clover, red, *Trifolium pratense*, 55722.
  subterranean, *T. subterraneum*, 55707.
  white, *T. repens*, 55572.

Coix lacryma-jobi, 55656.
Colocasia esculenta, 55617, 55657, 55658.
Combretum sp., 55626.
Corn, *Zea mays*, 55804.
Cracca candida, 55678.
Cucumber, *Cucumis sativus:*
Mammoth, 55767.
Harrison's Giant, 55768.
Cucumeropsis mannii, 55792.
Cucumis melo, 55766.
sativus, 55767, 55768.
Curcuma zedoaria, 55632.
Cyrtostachys lakka, 55579.

Datura leichhardtii, 55622.
Dioscorea alata, 55594–55597, 55712.
Diospyros spp., 55627, 55662.
kaki, 55659, 55660.
lotus, 55661.
Dock, curly, *Rumex crispus*, 55606.

Elaeagnus multiflora, 55771, 55772.
Eriobotrya hookeriana, 55679.
Erythrina arborescens, 55680.

Fagopyrum esculentum. See *F. vulgare.*
vulgare, 55798.
Ficus sp. 55628.
Fig, *Ficus* sp., 55628.
Flax, *Linum usitatissimum*, 55800.
Fortunella spp., 55580, 55581.
Fragaria sp., 55589.
roseiflora, 55726.

Garcinia mangostana, 55728, 55762.
Glycine hispida. See *Soja max.*
Grass, *Paspalum conjugatum*, 55693.
Saccharum arundinaceum, 55667.
spontaneum, 55668.
Guarana, *Paullinia cupana*, 55738.
Guilielma utilis, 55796, 55807.
Gumi, *Elaeagnus multiflora*, 55771, 55772.

Hardenbergia monophylla. See *Kennedia monophylla.*
Hemp, *Cannabis sativa*, 55797.
Holcus sorghum, 55793, 55794, 55799.
Holly, *Ilex insignis*, 55682.
Hordeum vulgare pallidum, 55714.
Hydrangea robusta, 55681.
Hypericum canariense, 55754.

Ilama, *Annona diversifolia*, 55709.
Ilex insignis, 55682.
paraguariensis, 55621.
Indigo. See *Indigofera* spp.
Indigofera australis, 55600.
dosua tomentosa, 55683, 55748.

Jasmine, *Jasminum dispermum*, 55684.
Jasminum dispermum, 55684.
Job's-tears, *Coix lacryma-jobi*, 55656.

Kaki, *Diospyros kaki*, 55659, 55660.
Kennedia monophylla, 55601.
Kiffy, *Cucumeropsis mannii*, 55792.
Kumquat, *Fortunella* spp., 55580, 55581.

Laurocerasus acuminata, 55685.
Leycesteria belliana, 55686.
Ligustrum confusum, 55687.
Lilium spp., 55610, 55730, 55751, 55752, 55756, 55770, 55778–55780.
sutchuenense, 55609.
Lily. See *Lilium* spp.
Lime, finger, *Microcitrus australasica*, 55588.
Linum usitatissimum, 55800.
Lotus uliginosus, 55710.
Lycopersicon esculentum, 55575–55578, 55590, 55591.

Magnolia campbellii, 55688, 55723.
Malus sieboldii, 55744.
Mangifera altissima, 55812.
Mangosteen, *Garcinia mangostana*, 55728, 55762.
Maple, *Acer campbellii*, 55669.
Matiliscuate, *Tabebuia pentaphylla*, 55737.
Medicago sativa, 55569–55571, 55586, 55646, 55724.
Michelia cathcartii, 55689.
excelsa, 55690.
lanuginosa, 55691.
Microcitrus australasica, 55588.
Millettia dielsiana, 55663.
Mimosa rubicaulis, 55749.
Morus laevigata, 55692.
Mulberry, *Morus laevigata*, 55692.
Mu-oil tree, *Aleurites montana*, 55647–55650.

Musa spp., 55592, 55593.
Muskmelon, *Cucumis melo*, 55766.
Myrica rubra, 55735.

Nageia cupressina, 55664.
Narras, *Acanthosicyos horrida*, 55763.
Nicotiana sylvestris, 55750.
Nikau, *Rhopalostylis sapida*, 55619.

Oca, *Oxalis tuberosa*, 55585.
Orange, Groverly Navel, *Citrus sinensis*, 55743.
Oryza sativa, 55731, 55795.
Osyris alba, 55791.
Oxalis tuberosa, 55585.

Palm, *Cyrtostachys lakka*, 55579.
Phoenix spp., 55611–55615, 55665.
Rhopalostylis sapida, 55619.
Trachycarpus martianus, 55706.
Pandanus tectorius, 55629.
Panicum miliaceum, 55801.
Papaya, *Carica papaya*, 55733.
Paspalum conjugatum, 55693.
Paullinia cupana, 55738.
Pea tree, dwarf, *Caragana pygmaea*, 55769.
Peach, *Amygdalus persica*, 55775, 55776, 55813.
Kings Seedling, 55739.
Sunrise, 55470.
Watts Early, 55741.
White Cling, 55742.
Peanut, *Arachis hypogaea*:
Broel, 55808.
Paarse Holle, 55809.
Toeban, 55810.
Pear, Van Fleet, *Pyrus serotina* × *communis*, 55805.
Pejibaye, *Guilielma utilis*, 55796, 55807.
Persea americana, 55625, 55736.
gratissima. See *P. americana*.
Persimmon, *Diospyros* spp., 55627, 55662.
Phaseolus aureus, 55573, 55574.
Phleum pratense, 55603, 55604, 55616, 55623, 55734, 55806.
Phoenix spp., 55611–55615, 55665.
Phyllostachys spp., 55582, 55583, 55713.
Picea morinda. See *P. smithiana*.
smithiana, 55694.
Pieris formosa, 55695.
Plum, *Prunus* spp., 55759–55761, 55783, 55784.
hybrid, *Prunus salicina* × *cerasifera*:
Ford's Early, 55745, 55746.
Norris Early, 55747.
Podocarpus javanicus. See *Nageia cupressina*, 55664.
Prinsepia sinensis, 55711.
utilis, 55719.
Proso, *Panicum miliaceum*, 55801.
Prunus spp., 55720, 55757–55761, 55782–55784.
acuminata. See *Laurocerasus acuminata*.
armeniaca, 55725, 55729.
majestica, 55732.
mume, 55633–55645.
napaulensis, 55696.
persica. See *Amygdalus persica*.
salicina × *cerasifera*, 55745–55747.
sargentii. See *P. serrulata sachalinensis*.
serotina, 55764, 55765.
serrulata, 55587.
pubescens, 55715.
sachalinensis, 55716.
spontanea, 55717.
tomentosa, 55781.
endotricha, 55608.
Pterocarpus sp., 55708.
Puriri, *Vitex lucens*, 55620.
Pyrus serotina × *communis*, 55805.

Raspberry, *Rubus* spp., 55785–55787.
Rattan, *Calamus* sp., 55653.
Rheum rhaponticum, 55789.
Rhododendron arboreum, 55697.
ciliatum, 55698.
dalhousiae, 55699.
falconeri, 55700.
maddeni, 55701.
Rhopalostylis sapida, 55619.
Rhubarb, *Rheum rhaponticum*, 55789.
Rice, *Oryza sativa*, 55731, 55795.
wild, *Zizania* sp., 55584.
Rosa sp., 55721.
Rose, *Rosa* sp., 55721.

Rubus spp., 55630, 55631, 55755, 55785–55787.
fimbriiferus, 55666.
glaucus, 55788.
incisus, 55773.
microphyllus, 55774.
palmatus. See *R. microphyllus*.
Rumex acetosa, 55605.
crispus, 55606.

Saccharum arundinaceum, 55667.
spontaneum, 55668.
Saurauja fasciculata, 55702.
napaulensis, 55703.
Skimmia laureola, 55704.
Soja max, 55802.
Sorghum, *Holcus sorghum*, 55793 55794, 55799.
Sorghum vulgare. See *Holcus sorghum*.
Sorrel, *Rumex acetosa*, 55605.
Spiraea micrantha, 55705.
Spruce, *Picea smithiana*, 55694.
Strawberry, *Fragaria* sp., 55589.
Fragaria roseiflora, 55726.

Tabebuia pentaphylla, 55737.
Taro, *Colocasia esculenta*, 55617, 55657, 55658.
Tephrosia candida. See *Cracca candida*.
Timothy, *Phleum pratense*, 55603 55604, 55616, 55623, 55734, 55806.
Tobacco, *Nicotiana sylvestris*, 55750.
Tomato, *Lycopersicon esculentum*, 55575–55578, 55590, 55591.
Trachycarpus martianus, 55706.
Trifolium pratense, 55722.
repens, 55572.
subterraneum, 55707.
Triticum aestivum, 55803.
vulgare. See *T. aestivum*.

Undetermined, 55753.

Vitex lucens, 55620.

Wampi, *Claucena lansium*, 55598.
Wheat, common, *Triticum aestivum*, 55803.
Widdringtonia whytei. See *Callitris whytei*.

Xanthosoma sp., 55618.

Yam, greater, *Dioscorea alata*, 55594–55597, 55712.
Barbados Red, 55712.
Frances, 55595.
Kohl-E-Patta, 55596.
Morado, 55597.
Pelua, 55594.
Yang mae, *Myrica rubra*, 55735.
Yautia, *Xanthosoma* sp., 55618.
Yerba maté, *Ilex paraguariensis*, 55621.

Zea mays, 55804.
Zizania sp., 55584.

Issued October, 1924

U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1922

(No. 73; Nos. 55814 to 56144)

WASHINGTON
GOVERNMENT PRINTING OFFICE
1924

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
10 CENTS PER COPY

CONTENTS

	Page.
Introductory statement	1
Inventory	5
Index of common and scientific names	43

ILLUSTRATIONS

	Page.
PLATE I. A handsome Chinese primrose. (*Primula sinopurpurea* Balf. f.; S. P. I. No. 55899)	14
II. A drought-resistant Asiatic plum. (*Prunus* sp.; S. P. I. No. 55901)	14
III. A showy alpine plant from western China. (*Incarvillea grandiflora brevipes* Sprague; S. P. I. No. 55934)	20
IV. A chestnut from the mountains of southwestern China. (*Castanea* sp.; S. P. I. No. 56080)	20

INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1922 (NO. 73; NOS. 55814 TO 56144)

INTRODUCTORY STATEMENT

To many it may not be apparent why the Province of Yunnan, which borders Tibet on China's western boundary, is a particularly likely place to search for plants for introduction into America.

Mr. Rock, our agricultural explorer, who has been collecting in this region now for nearly three years, shows by his notes and specimens in what way Yunnan plants are likely to be valuable to American horticulture.

The vast mountain area, in which he has been exploring, where snow-clad peaks 12,000 to 20,000 feet high rise from almost subtropical valleys and gorges thousands of feet deep have been channeled by the largest and longest rivers in Asia (the Mekong and the Yangtze) in their break through the mountains which bound the Tibetan table-land, furnishes a home for thousands of interesting plants which some day will enrich our horticulture.

It is true that other exploring botanists, like Forrest and Kingdon Ward, have visited it, but this is the first time that an American explorer, with the needs of our farms and gardens in mind, has hunted for plants which can be grown in American dooryards and has entered western China by its back door, so to speak, which is Bhamo, on the border of Burma.

Mr. Rock's itinerary, like that of Frank Meyer, will be given in detail in a later number of this series. It suffices for him to locate the region where he collected the plants in this inventory. This centers chiefly around Likiang and the Likiang Snow Range. Many of the plants were found in localities where the thermometer goes below 32° F. and heavy snowfalls occur. High tropical altitudes and temperate-region latitudes correspond, but only roughly so, for it has come to be well recognized that high alpine plants are accommodated to conditions which do not prevail at many places at sea level in the Temperate Zone. The heavy and continuous blanket of snow which characterizes many mountain regions makes it possible for many rather tender plants, such as the potato, for example, to live in the ground over winter. To illustrate, in the higher altitudes of the Rockies on its western slopes and also as far north as Cape Breton Island, Nova Scotia, potato tubers often remain unfrozen in the soil because the soil is blanketed with snow before freezing weather occurs, whereas otherwise they would be frozen in

the ground nearly every year as far south as the Carolinas. Then, too, there must be taken into consideration the length of day, the atmospheric pressure which affects the amount of oxygen and carbon dioxid in the air, and the effect which high mountain atmosphere has upon the actinic rays of the sun. In other words, it should never be forgotten that these plants are essentially cosmic machines run by the sun's energy and that in no two places on the globe do identical atmospheric conditions prevail.

Twenty-five years of experience has taught those of us who have been establishing new plants in America to be very cautious in predicting where plants will thrive, for no one can foresee except in a general way the degree of accommodation which any new plant will exhibit. The only way to find out is to test it, and Mr. Rock has sent in large quantities of seeds for trial.

Exploring alone in any country has its shady side, but in Yunnan, where the explorer may at any time meet bands of roving bandits and be subjected to the barbarities which only savages know how to inflict, Mr. Rock has had to meet conditions which have been almost unbearable.

This fact should be borne in mind by those to whom in the years to come these plants are sent for trial, and their value should be measured in terms of the dangers and hardships which they have occasioned. That Mr. Rock has been able to hold out and keep moving to America a stream of seeds and cuttings is the wonder of his friends.

One of the reasons for Mr. Rock's expedition to Yunnan was to discover what species of chestnuts grow there and secure their seeds. In this quest he has been successful.

On the summit of the Salwin Ridge, southwestern Yunnan, Mr. Rock found dense forests of a large species of chestnut (*Castanea* sp.; No. 56080) which grows to be 100 feet tall and 5 feet in diameter and bears sweet edible nuts the size of chinquapins. It is an excellent timber tree, ratoons freely from the stump, and no evidence of any disease was found upon it. Four days' journey west of Talifu he found a small forest species, only 60 feet tall (*Castanea* sp.; No. 56119), also with small nuts; and a tall species near Tali Lake which bore deliciously sweet nuts (*Castanea* sp.; No. 55984). Whether out of these species or others which he has collected will come one which will solve the chestnut problem is a question which will require years to answer. At any rate the first step—that of getting together the Asiatic chestnuts—has been taken.

From the discovery by Mr. Rock of numerous distinct species of wild apples growing in the mountains far removed from civilization, it would appear that western Yunnan is the region from which to get southern forms of this fruit with which to build up by hybridization an apple for our Southern States which now lie below the apple belt. This collection includes fruits varying from the size of cherries to those of large-sized crab apples. Some are trees 40 feet high, growing in hot, dry, rocky locations where little else besides the Yunnan pine grows, and others have long drooping branches. None of these has as yet been determined botanically.

Wild as well as cultivated peaches also occur in western Yunnan, and Mr. Rock reports there a clingstone white-fleshed peach

(*Amygdalus persica;* No. 55929) 3½ to 4 inches in diameter, which he found growing wild in the Likiang Valley, and other trees 40 to 50 feet tall with fruits tasting like cherries (Nos. 55885 and 55888).

Among the numerous wild species of Prunus are plums with fruits the size of walnuts (*Prunus* sp.; No. 55824), a lemon-yellow form from regions subjected to extreme drought and intense heat from October to June (No. 55901), and small-fruited forms, from 12,000 feet altitude on the slopes of Satseto in pure limestone soils, which may prove of value for stocks.

Mr. Rock has collected species of Rubus bearing delicious orange-red berries from 12,000 to 13,000 feet altitude (Nos. 55891, 55892, and 55904) and others from the shade of the spruce forest with fruits orange-red and translucent and an inch in diameter (No. 55892), crimson-stemmed drooping-branched ornamental forms (No. 55893), and still others which are spineless (No. 56114).

Mr. Rock has sent in a wild grape (*Vitis* sp.; No. 55953) which he found covering rosebushes there. It is a prolific bearer and its dull-purple berries are very sweet, which is not usually the case with wild species of Vitis. He has sent nuts from a wild walnut tree 50 feet tall and with a spread of branches of 100 feet (*Juglans regia;* No. 55989); a tree hazelnut (*Corylus* sp.; No. 55987) which grows to be 60 to 80 feet tall and has handsome, very large leaves and large edible nuts; various as yet unidentified species of persimmon (*Diospyros* spp.; Nos. 56132 to 56134); the rare *Catalpa duclouxii* (No. 55931) which makes a tree 70 to 80 feet tall and 4 feet in diameter and produces hard durable timber suitable for building purposes that may contribute to the development of a superior hybrid catalpa for forest purposes. In the way of ornamental shrubs, lilies, and other ornamental plants the region has already become noted in England. Mr. Rock has sent seeds of a honeysuckle (*Lonicera* sp.; No. 55897); the rare *Osteomeles schwerinae* (No. 55992) with its dull-purple fruits which are sweet and edible; gorgeous primroses (*Primula* spp.); an edible-fruited viburnum (*Viburnum* sp.; No. 55950); an ornamental currant (*Ribes* sp.; No. 55890); the wild peony (*Paeonia delavayi;* Nos. 55898, 55937, 55994); and a striking new ornamental tree (*Cornus* sp.; No. 55955).

In addition to Mr. Rock's collections there have been received from various correspondents throughout the world a wild plum from Beirut (*Prunus ursina;* No. 55872) for trial as a stock in southern California; Goodman's Choice peach (*Amygdalus persica;* No. 55831), a great success in Australia, which if it succeeds in America as it has there might easily add millions to the California peach-canning industry; a new mango (*Mangifera indica;* No. 55839) from Gerrit P. Wilder, of Honolulu, which turns yellow while hard and keeps well for two weeks; 39 varieties of beardless spring wheat (*Triticum aestivum;* Nos. 55842 to 55870) originated by two noted plant breeders of New South Wales, J. P. Shelton and J. T. Pridham, of Sydney. Some of these varieties are said to produce better flour than the noted Hard Federation wheat, which is also of Australian origin.

Dr. P. J. S. Cramer, of the Java Department of Agriculture, presents two interesting varieties of sugar cane (*Saccharum officinarum:* Nos. 55829 and 55830) from the Sugar Experiment Sta-

tion at Pasoeroean, Java, one of which instead of producing sugar produces only starch in its stems and one whose flower heads are so hypertrophied as to be used as a vegetable by the Javanese.

The botanical determinations of seeds introduced have been made and the nomenclature determined by H. C. Skeels, and the descriptive notes have been prepared by Paul Russell, who has had general supervision of this inventory.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., December 21, 1923.

INVENTORY[1]

55814. Olea europaea L. Oleaceæ. Olive.

From Nice, France. Cuttings presented by Dr. A. Robertson Proschowsky. Received November 25, 1922.

Variety *Arbéquina*. This is a favorite among the Catalan nurserymen in the Province of Lerida, Spain, where it represents 92 per cent of the olives planted. It appears to be the one most resistant to the rather frequent drops in temperature on the Urgel Plain. The production is very high in the irrigated sections every year and every two years in the other sections. In habit the tree is spreading, with the secondary branches reflexed. In this region the olive trees are pruned every two years and often every year, with a special rejuvenating pruning every 10 or 12 years, in order to keep down the size of the trees and make easier the hand picking of the fruit. (Adapted from *Revue de Botanique Appliquée, vol. 2, p. 26.*)

55815. Dendrocalamus sikkimensis Gamble. Poaceæ. Bamboo.

From Darjiling, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Garden. Received November 1, 1922.

"Seeds of the largest bamboo of these forests, collected at an altitude of 2,000 feet." (*Cave.*)

A beautiful tufted bamboo native to Sikkim, India, where the dark-green culms reach a height of 60 feet or more and a diameter of 5 to 7 inches. The species is easily distinguished by its large reddish brown globular flower heads and densely velvety stem sheath. The long narrow leaves are said to be poisonous, and from the stems are made the "chungas," or native buckets, used for carrying water and milk and for churning. (Adapted from *Annals of the Royal Botanic Garden, Calcutta, vol. 7, p. 82.*)

For previous introduction, see S. P. I. No. 54450.

55816. Voandzeia subterranea (L.) Thouars. Fabaceæ.

From Ebolowa, Cameroon, West Africa. Seeds presented by Fred Hope. Received November 2, 1922.

A creeping annual leguminous plant which matures its fruits in the same manner as the peanut, whence its common name "groundnut." It is native to tropical Africa and is extensively grown in that continent, as well as in other tropical countries, for its edible seeds.

For previous introduction, see S. P. I. No. 55104.

55817 to 55819.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received October 4, 1922. Quoted notes by Mr. Rock.

---

[1] It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

55817 to 55819—Continued.

55817. MALUS sp. Malaceæ. **Apple.**

"(Likiang. July, 1922.) A tree 40 feet high, found wild and semicultivated in the vicinity of Likiang. The handsome fruits, about 2 inches in diameter, are bright crimson with just a touch of yellow. The flesh is firm, not mealy, with an acid-sweet flavor. A delicious bright-red jelly is made by boiling the fruits whole, in the skin, 2 parts of apples to 1 part of water; the juice is strained and boiled with sugar, 3 parts of sugar to 5 parts of juice."

55818. PRUNUS sp. Amygdalaceæ. **Plum.**

"(Near Szemao. July, 1922.) A large tree, 40 feet or more in height, collected 30 li (9 miles) from Szemao, at 5,000 feet altitude. The red fruits are the size of walnuts, with loose, rather sour flesh. This should be good as a stock plant."

55819. PRUNUS sp. Amygdalaceæ. **Plum.**

"(Near Szemao. July, 1922.) A large tree 45 feet high, found in the mountains at an altitude of 6,000 feet. The dark-red fruits, the size of large walnuts, have hard flesh with a sour insipid flavor. This tree was free from disease and should make a good stock plant."

55820 to 55826.

From Likiang, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received October 9, 1922. Quoted notes by Mr. Rock.

55820. COTONEASTER sp. Malaceæ.

"(No. 5749. August, 1922.) A very ornamental shrub 8 to 10 feet high, growing in open scrubland among limestone bowlders at altitudes of 9,000 to 10,000 feet on the Likiang Snow Range. The leaves are densely packed along the stems; the pinkish flowers are numerous, as are also the scarlet and yellow fruits, the latter resembling miniature apples."

55821. COTONEASTER sp. Malaceæ.

"(No. 5781. August, 1922.) A prostrate shrub, growing on pure limestone rocks on the Likiang Snow Range at altitudes of 8,000 to 10,000 feet. It has small dark-green glossy leathery leaves, pinkish white flowers, and rich-red fruits and would make a splendid shrub for rockeries."

55822. PRUNUS sp. Amygdalaceæ. **Cherry.**

"(August, 1922.) A tree 35 to 40 feet high, growing among limestone bowlders at an altitude of 10,000 feet. It is a fine shapely tree, with glossy leathery foliage, racemes of white flowers, and dark-red glossy fruits the size of a pea.

"The temperature at the village of Nguluke, in the Likiang Plain, drops to below zero Fahrenheit in the winter, and a fall of 22 inches of snow in December is not uncommon."

55823. PRUNUS sp. Amygdalaceæ. **Cherry.**

"(August, 1922.) A shapely tree, which grows at an altitude of 10,000 feet among limestone bowlders on the Likiang Snow Range. It has long drooping racemes of cream-colored flowers and small yellowish green fruits which are sour when ripe."

55824. PRUNUS sp. Amygdalaceæ. **Plum.**

"(August, 1922.) A very hardy plum tree 35 to 40 feet high, growing semiwild in the vicinity of Likiang, at altitudes of 8,500 to 9,000 feet. The bright-red, perfectly round fruits are the size of large walnuts, clingstone, with yellow sweetish sour flesh which makes excellent jelly and jam."

55820 to 55826—Continued.

55825. RUBUS BIFLORUS Buch.-Ham. Rosaceæ.

"(July, 1922.) A rambling shrub, collected on the Likiang Snow Range at altitudes of 11,000 to 12,000 feet. The large leaves have woolly lower surfaces, the large calyx is foliaceous, and the subacid yellow fruits are the size of a thimble."

55826. RUBUS sp. Rosaceæ.

"(No. 5359. July, 1922.) A vigorous rambling shrub, collected at an altitude of 12,000 feet on the Likiang Snow Range. It has red spiny stems, leaves with white lower surfaces, pinkish purple flowers, and small dark-red fruits of a delicious sweet flavor."

55827. CASTANEA SATIVA Mill. Fagaceæ. European chestnut.

From Morristown, N. J. Nuts presented by Dr. C. S. Sargent, Arnold Arboretum, Jamaica Plain, Mass. Received October 27, 1922.

From a tree grown on T. H. Symington's place.

Introduced for department specialists engaged in chestnut-breeding experiments.

55828. CUCUMIS SATIVUS L. Cucurbitaceæ. Cucumber.

From Burringbar, New South Wales. Seeds presented by B. Harrison. Received October 11, 1922.

"*Harrison's Long.* A cucumber 2 to 3 feet long, with tender, crisp, and palatable flesh. This variety is the result of careful selection and cultivation." (*Harrison.*)

55829 and 55830. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Pasoeroean, Java. Cuttings presented by J. Kuyper, assistant director, Sugar Experiment Station, Pasoeroean, at the request of Dr. P. J. S. Cramer, Director of the General Experiment Station, Buitenzorg. Received October 13, 1922. Quoted notes by Doctor Cramer.

55829. "*Teboe glonggong.* A variety with starch instead of sugar in its stems; this appears to be a botanically interesting variation."

55830. "*Teboe troeboeg.* A variety with hypertrophied flowers, used here as a vegetable."

55831. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.

(*Prunus persica* Stokes.)

From Eastwood, near Sydney, New South Wales. Trees purchased from C. E. Vessey, Mount Tomah Nurseries. Received at the Plant Introduction Garden, Chico, Calif., September, 1922. Numbered October, 1922.

Goodman's Choice.

The following notes concerning the merits of this peach have been received from nurserymen in Australia:

From Herbert J. Rumsey, Dundas, New South Wales, June 13, 1922: "We have sent out a number of letters to friends who are in a position to know the behavior of this peach and its comparison with *Phillips Cling* [at present the standard canning variety in California]. We have had a reply from Mr. Goodman, who states that this is easily the best quality canning peach the canners have ever seen and that growers in that State (Victoria) are putting in more acres of it than of all other yellow clings together.

"His catalog description, quoted below, shows that it ripens about six weeks later than *Tuscan Cling:*

"'Undoubtedly the greatest yellow-fleshed clingstone peach introduced for many years. The tree is a heavy bearer each season of medium-sized fruits that are admirable for canning. The skin has a red blush on the sunny side;

the flesh is beautifully rich and translucent; the variety is remarkable for even crops and gradual ripening, which means so much when the picking campaign is in progress. The peaches ripen toward the end of February and, as the name indicates, represent my choice for canning.'

"We know the behavior of the clings generally in this State, and we find that they have a great tendency to be uneven in shape. Our own nurseryman states that *Goodman's Choice* is one of the best late peaches that he has come across, but as we have no growers for canneries around there we can not give an authoritative report from that point of view ourselves."

From G. W. Peart, manager for C. J. Goodman, Bairnsdale, Victoria, June 14, 1922: "The flesh of this peach is wonderfully rich for canning purposes, and the processed product is just as superior to other varieties in appearance as it is in taste. In quality it is superior to *Phillips Cling*. Canners in this State declare that they can obtain more dozens of high-grade quality canned peaches from a ton of *Goodman's Choice* than from any other variety. This means that canners pay higher prices for *Goodman's Choice*. The variety is a regular cropper and has never failed to set a good crop in 12 years except once when a record late frost ruined all the stone fruits in the district. Unlike *Phillips Cling*, all the fruits on the tree come up to first-class cannery requirements." In another letter, dated June 30, 1922, Mr. Peart says further: "This peach originated about 18 years ago in one of our canning peach orchards at Mossiface, Victoria. After careful testing, the late Charles J. Goodman planted 3,000 trees in 1910, and we commenced to sell trees in 1915. To-day I am selling more trees of this variety than of any other clingstone peach. Z. Akers, Shepparton Fruit Preserving Co., Shepparton, Victoria, has a block of 6-year-old *Goodman's Choice*, and he claims to have harvested an average crop of 3½ bushels of fruit per tree when the trees were just 4 years old."

From E. Meeking, Senior Fruit Inspector, Melbourne, Victoria, June 14, 1922: "The *Goodman's Choice* variety of peach is considered, in the opinion of those competent to judge, the best canning peach which has yet been produced. It is a good cropper, produces uniform fruits, is of excellent color and texture, and its flavor is considered superior to that of any other canning peach yet produced."

From L. J. Wicks, Highbury, South Australia, July 13, 1922: "As a canning fruit *Goodman's Choice* is certainly O. K. The texture is just right; it makes a rather pale sirup which, however, is remarkably clear."

55832 and 55833.

From Buitenzorg, Java. Seeds presented by Carl Hartley. Received October 11, 1922. Quoted notes by Mr. Hartley.

55832. CITRUS NOBILIS DELICIOSA (Ten.) Swingle. Rutaceæ. **Mandarin orange.**

"A rather large, very loose-skinned mandarin orange grown in the highlands of western Java under the name *Djeroek Garoet*. The fruits from which these seeds were taken were juicy and of excellent flavor."

55833. RUBUS FRAXINIFOLIUS Poir. Rosaceæ.

"Collected at an altitude of about 3,500 feet on the Salak in western Java. The bush is often 2 meters high and very slightly thorny. The conical strawberry-red fruit, 2.5 centimeters long and 2 centimeters wide at the base, is inclined to be hollow and deficient in pulp, but it is not acid and the flavor is fairly good. The species may prove valuable in breeding work."

For previous introduction, see S. P. I. No. 31096.

55834. DIOSCOREA sp. Dioscoreaceæ. Yam.

From China or Japan. Tuber presented by E. R. Sasscer, Federal Horticultural Board. Secured by an inspector of the California State Department of Agriculture. Received October 2, 1922.

"Tuber long, slender, dark skinned, white fleshed, rather small. When cooked the flesh is firm, but fairly mealy and of very good flavor." (*R. A. Young.*)

55835 and 55836. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**

(*Prunus persica* Stokes.)

From the Plant Introduction Garden, Chico, Calif. Seedling trees numbered October, 1922, for convenience in distribution. Quoted notes by J. E. Morrow.

A shipment of seeds of the peach variety *Tardio Amarillo* was received from southern Spain in November, 1916, and given S. P. I. No. 43570. As is well known, peach varieties do not come true to seed, and the two trees described below are promising seedlings from this shipment.

55835. "Tree No. 6, Test Nursery. Fruits 2⅛ by 2¼ inches; average weight 4 ounces; color golden with a faint-red blush; basin deep and narrow, slight depression at suture; flesh yellow; pit yellow. Season September 5 to September 15, later than last year. This is a good canning clingstone peach and a heavy bearer."

55836. "Tree No. 8, Test Nursery. Fruits 2 by 2⅛ inches; average weight 4 ounces; basin deep, narrow; suture only a thin line; flesh deep yellow; pit small, yellow; flesh of good texture and flavor. This peach should be propagated for canning purposes. It is of smaller size than last season and later in ripening."

55837. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Kelburn, Wellington, New Zealand. Presented by E. Bruce Levy, biology section, Department of Agriculture, New Zealand. Received October 16, 1922.

"This seed, secured directly from the grower, represents a strain of timothy which has been grown in one district for 22 years." (*Levy.*)

Locally grown seed introduced for department specialists engaged in timothy-breeding investigations.

55838. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Glavica, Dalmatia, Yugoslavia. Presented by the Knin Agricultural School, Glavica. Received October 14, 1922.

Seeds consisting of a mixture of "North" and "Composite" varieties, harvested in 1921 in Zetva, and obtained from a seed firm in Laibach, Slovenia, Yugoslavia.

Locally grown red-clover seed introduced for cultural and comparison tests.

55839. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

From Honolulu, Hawaii. Plant presented by Gerrit P. Wilder, through Willis T. Pope, horticulturist, Hawaii Agricultural Experiment Station. Received October 18, 1922.

"*Wootten.* The original was produced from seed of the mango known as No. 7, originally from Jamaica, and is growing on the property of J. L. Horner, Makiki St., Honolulu.

"A formal description of the fruit is as follows: In size it is medium to large; shape roundish; slightly flattened on the sides, no apex point evident; weight about 10 ounces; color when ripe a shade between orange-yellow and yellow-orange, with tinges of pink and red at the stem end and pale-yellow dots all over the surface; skin medium thin, tough, peeling qualities fair, very pleasing fragrance; flesh rich apricot yellow, very good texture; flavor excellent, juicy, sweet-acid; seed medium to small for size of fruit.

"An important characteristic of this variety is that while still solid it has a very beautiful color as if ripe, making it a very desirable marketing form. It is one of the very best of this seedling class of mangos. In moderate temperatures it will remain in good condition as ripe fruit for two weeks." (*Wilder.*)

55840. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. **Yang-tao.**

Plants raised from seed secured from D. W. Coolidge, Pasadena, Calif. Numbered October, 1922, for convenience in distribution.

Plants of this large-fruited seedling have been propagated at the Plant Introduction Garden at Chico, Calif., under P. I. G. No. 19420 and at Bell, Md., under P. I. G. No. 1846.

"The *yang-tao*, an ornamental deciduous climber native to Szechwan, China, has attracted considerable attention because of the high quality of its fruits. The leaves have a plushlike texture and an unusual dark-green color, and their large size and regular spacing add to the beauty of the vine. The flowers are buff yellow to white, fragrant, often 1½ inches across, and are produced in great abundance. The ovoid to globose russet-brown villous fruits are about 2 inches long. The flesh is green, of most excellent flavor, resembling that of a gooseberry, but tempered with a flavor peculiarly its own. The fruit is good when eaten fresh and also makes very fine jam and sauce." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 54460.

55841. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

From Montevideo, Uruguay. Seeds presented by Luis Guillot, Dirección de Paseos Públicos. Received October 18, 1922.

Introduced from tropical America in the hope of securing a strain immune to tomato leaf-spot.

55842 to 55870. TRITICUM AESTIVUM L. Poaceæ.
(*T. vulgare* Vill.) **Common wheat.**

From Sydney, New South Wales. Presented by J. P. Shelton, plant breeder, Department of Agriculture, Sydney. Received October 17, 1922. Quoted notes by Mr. Shelton.

"The varieties listed below are all beardless spring wheats, white grained, with medium to strong flour qualities, and all give commercial yields in some districts. Those marked 'strong flour' should give a flour of better bread-making qualities than those marked 'Hard Federation.'"

55842 to 55855. "(A) Varieties lately bred in New South Wales by J. T. Pridham, but not yet in general cultivation."

55842. *Aussie.*

55843. *Baldknob.*

55844. *Early Bird.* (Very early.)

55845. *Forelock.* (Bearded.)

55846. *Ghurka.* (Strong flour. Very early.)

55847. *Riverina.* (Early.)

55848. Selection 13 (C1) from Hard Federation. (Strong flour.)

55849. Selection 19 (C1) from Hard Federation. (Strong flour.)

55850. Selection 69 (A6) from Hard Federation.

55851. *Stamina.* (Strong flour. Early.)

55852. *Wagga* No. 49.

55853. *Wagga* No. 54. (Early.)

55854. *Wandilla.*

55855. *Waratah.* (Early.)

55856 to 55860. "(B) Varieties in general cultivation in New South Wales and Victoria."

55856. *Canberra.* (Very early and prolific.)

For previous introduction, see S. P. I. No. 42109.

55842 to 55870—Continued.

55857. *Gallipoli.*

55858. *Gresley.*

55859. *Improved Steinwedel.*

55860. *Minister.* (Strong flour and late.)

55861 to 55868. "(C) Varieties lately fixed in West Australia; some from crosses made in New South Wales."

55861. *Carrabin.* (Strong flour.)

55862. *Cuballing.*

55863. *Dindiloa.* (Strong flour.)

55864. *Gerralying.* (Strong flour.)

55865. *Merredin.*

55866. *Nabawa.*

55867. *Nangeenan.*

55868. *Narrogin.* (Strong flour.)

55869 and 55870. "(D) Varieties for a hot climate with summer rainfall."

55869. *Boureng.*

55870. *Bunge.*

For previous introduction, see S. P. I. No. 47380.

55871. Peumus boldus Molina. Monimiaceæ.

From Santiago, Chile. Seeds presented by Salvador Izquierdo. Received October 13, 1922.

"*Boldo.* A small tree esteemed in Chile for its ornamental and medicinal value. The dried leaves are exported to Europe, where they are employed in diseases of the liver. An infusion of the flowers is also used medicinally. The fruits are eaten but are not of great value.

"The tree is diœcious and very aromatic in all its parts. It has opposite, rough, short-petioled, ovate leaves; the flowers, borne in small axillary racemes, are followed by fruits the size of our northern haws." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 54639.

55872. Prunus ursina Kotschy. Amygdalaceæ. **Plum.**

From Beirut, Syria. Seeds presented by Alfred E. Day, American University of Beirut. Received October 14, 1922.

"A wild plum. The fruits of this particular tree are decidedly larger and sweeter than usual; they are about 1¼ inches in diameter and yellow with pink cheeks." (*Day.*)

55873. Cotoneaster hebephylla Diels. Malaceæ.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received October 18, 1922.

"(Likiang, August, 1922.) A deciduous shrub 10 to 18 feet in height, growing in limestone soil at an altitude of 10,000 to 11,000 feet on the Likiang Snow Range. It has long rambling branches, white flowers, and dark-carmine fruits and is quite ornamental." (*Rock.*)

55874 to 55884.

From Petrograd, Russia. Seeds presented by Prof. N. I. Vavilov, director, Russian Bureau of Applied Botany of the Agricultural Scientific Committee, through D. N. Borodin. Received October 19, 1922. Quoted notes by Mr. Borodin.

"The numbers refer to the inventory book of the Russian Bureau of Applied Botany."

55874 to 55877. PISUM ARVENSE L. Fabaceæ. **Field pea.**

55874. "Vavilov's 'Mahor,' No. 193, 1921. From Varg on Goont, Pamir."

55875. "Vavilov's 'Mahor,' No. 194, 1921. From Sengi, Pamir."

55876. "Vavilov's 'Mushung,' No. 190. From Chil-Dare-Darviz, Pamir."

55877. "Vavilov's 'Mushung,' No. 195. From Kooliab, Pamir."

55878 to 55880. PISUM SATIVUM L. Fabaceæ. **Garden pea.**

55878. "Pissarev's B/11, No. 317. From Irkutsk Government, Siberia."

55879. "Pissarev's No. 318. From Ust-Uda, Urkutsk Government, Siberia."

55880. "Pissarev's 'Tulunsky Hybrid,' No. 316. From Tulun, Siberia."

The fact that the following are without ligules is noted as being of interest to botanists, such forms being rare in this country:

55881. SECALE CEREALE L. Poaceæ. **Rye.**

"Vavilov's rye, grown in Russia in 1921. From Pamir."

55882 to 55884. TRITICUM AESTIVUM L. Poaceæ. **Common wheat.** (*T. vulgare* Vill.)

55882. "Vavilov's wheat, No. 96. From Pamir."

55883. "Vavilov's wheat, No. 648. From Pamir."

55884. "Vavilov's wheat, No. 1569. From Pamir."

55885 to 55893.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received October 21, 1922. Quoted notes by Mr. Rock.

55885 to 55888. AMYGDAUS PERSICA L. Amygdalaceæ. **Peach.** (*Prunus persica* Stokes.)

55885. "(Puerhfu. August, 1922.) A large tree growing wild in the mountains at an altitude of 5,000 feet. The fruits are a beautiful red, clingstone, with juicy, rather strong-flavored flesh resembling that of a cherry."

55886. "(Puerhfu. August, 1922.) A large tree 50 feet in height, growing wild in the mountains at an altitude of 5,500 feet. The fruits are of fairly good size, yellow with a red cheek, clingstone, with yellow, very juicy flesh of excellent flavor.

55887. "(Likiang. August, 1922.) A large vigorous tree growing at an altitude of 8,500 feet. The large fruits, 2½ inches in diameter, are red and yellow on the surface, with firm snow-white, quite tasteless flesh. This should be a good stock plant."

55888. "(Puerhfu. August, 1922.) A large tree, 40 to 50 feet high, growing wild in the mountains. The fruits are the size of small apples, pure white outside, clingstone, with snow-white, very juicy flesh resembling that of a cherry.

55885 to 55893—Continued.

55889. MALUS sp. Malaceæ. **Apple.**

"(Likiang. August 15, 1922.) A large vigorous tree growing wild and semicultivated. The fruits, the size of walnuts, are bright crimson with a touch of yellow on one side, with acid-sweet, very palatable flesh, are excellent for jam or jelly and also quite ornamental."

55890. RIBES sp. Grossulariaceæ.

"(No. 5833. Likiang. August 16, 1922.) A shrub 6 to 15 feet in height, growing in alpine meadows at an altitude of 12,000 feet, where it is 5 or 6 feet high; also in fir forests, where it reaches a height of 15 feet. It is a beautiful plant with pendent branches loaded with flowers in early May. In the latter part of August the fruits appear; these are yellowish red berries the size of a pea, with an acid-sweet flavor."

55891 to 55893. RUBUS spp. Rosaceæ. **Raspberry.**

55891. RUBUS sp.

"(Likiang. August 15, 1922.) A shrub 4 feet high, growing in protected gulches on the Likiang Snow Range at an altitude of 12,000 feet. It bears delicious orange-red berries and may be only a form of the following [S. P. I. No. 55892]."

55892. RUBUS sp.

"(Likiang. August 15, 1922.) A shrub 4 feet high, growing on the Likiang Snow Range at an altitude of 13,000 feet in the shade of *Larix thibetica* and also in fir and spruce forests. The large orange-red translucent berries, an inch in diameter, are very juicy and of delicious flavor. This is certainly worthy of cultivation."

55893. RUBUS sp.

"(Likiang. August, 1922.) A shrub growing in sheltered ravines on the Likiang Snow Range at an altitude of 11,000 to 12,000 feet. It has crimson-stemmed drooping branches and trifoliolate leaves, with the lower surfaces slightly pruinose or silvery. The fruits, somewhat smaller than those of the preceding species, are obconical, darker red, and faintly pubescent."

55894 and 55895.

From Hongkong, China. Seeds presented by H. Green, superintendent, Botanical and Forestry Department. Received October 21, 1922.

55894. GARCINIA OBLONGIFOLIA Champ. Clusiaceæ.

A tree native to Hongkong, China, which is a relative of the mangosteen. It has narrow short-stalked leaves, terminal yellow flowers, and smooth fruits the size of a small apple. (Adapted from *Bentham, Flora Hongkongensis, p. 25.*)

"This species has just come into bearing in one of our greenhouses, and we find the fruit to be of very good quality for eating out of hand. The flavor suggests that of the mangosteen." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 36497.

55895. UVARIA CALAMISTRATA Hance. Annonaceæ.

"A native fruit which grows wild here and is erroneously called by the natives 'Hill Lai Chi.'" (*Green.*)

A climbing plant, native to Hongkong, with rather thick oblong leaves, clustered yellowish flowers, and elliptical fruits about a third of an inch in length. (Adapted from *Journal of Botany, vol. 20, p. 77.*)

55896 to 55905.

From Likiang, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received October 25, 1922. Quoted notes by Mr. Rock.

55896. COTONEASTER PANNOSA Franch. Malaceæ.

"(No. 5818. August 20, 1922.) A very ornamental shrub 10 feet high, growing among limestone bowlders in fir forests and alpine meadows on the Likiang Snow Range at altitudes of 9,000 to 12,000 feet. The flowers are whitish pink and the ovate fruits purplish black."

For previous introduction, see S. P. I. No. 40169.

55897. LONICERA sp. Caprifoliaceæ. **Honeysuckle.**

"(No. 6058. August 25, 1922.) A shrub or small tree 20 feet in height, with a trunk a foot in diameter, which grows in limestone soil in the foothills near Likiang at altitudes of 9,000 to 10,000 feet. The flowers, which appear in early spring, are a deep orange-yellow, with a paler lower lip, and the small round fruits are tomato red."

55898. PÆONIA DELAVAYI Franch. Ranunculaceæ. **Peony.**

"(No. 6059. August 25, 1922.) A very attractive, vigorous shrub 4 feet high, growing on steep slopes among limestone bowlders and in alpine meadows at altitudes of 10,000 to 13,000 feet on the Likiang Snow Range. The deep-crimson flowers are 3 inches in diameter."

55899. PRIMULA SINOPURPUREA Balf. f. Primulaceæ. **Primrose.**

"(No. 5783. August 25, 1922.) A very charming robust plant 3 feet in height, growing in acid soil in boggy meadows at an altitude of 14,000 feet on the Likiang Snow Range. The leaves are golden yellow beneath, and the large umbels of rich-purple flowers appear in April and early May. When in flower this plant is very striking."

For previous introduction, see S. P. I. No. 55339.

For an illustration of this Chinese primrose, see Plate I.

55900. PRIMULA VINCIFLORA Franch. Primulaceæ. **Primrose.**

"(No. 5782. August 25, 1922.) One of the finest primulas found on the Likiang Snow Range. It grows in company with the preceding, *P. sinopurpurea* [S. P. I. No. 55899], in similar situations, though not nearly so common, for it does not seed readily. The deep indigo-blue flowers are an inch and a half across and, like the preceding, appear quite early."

For previous introduction, see S. P. I. No. 55340.

55901. PRUNUS sp. Amygdalaceæ. **Plum.**

"(No. 6056. August 25, 1922.) A wild plum tree 20 to 25 feet high, of spreading habit, found in limestone soil on the eastern side of the Likiang Plain, opposite the Snow Range, at an altitude of 10,500 feet. It bears perfectly round fruits an inch in diameter, lemon yellow, opaque, with firm sour flesh which is somewhat sweet when absolutely mature. The tree is very healthy and an abundant fruiter and should make a good stock plant where hardiness is desired. The locality where it was collected is subject to drought from October to June, when the heat is intense, and snow falls in the winter."

For an illustration of this Asiatic plum, see Plate II.

55902. RIBES GLACIALE Wall. Grossulariaceæ.

"(August 21, 1922.) A shrub 15 feet high, growing in alpine meadows at an altitude of 12,000 to 15,000 feet on the Likiang Snow Range. The flowers, which vary from cream colored to red, and the red oval berries make this shrub decidedly ornamental."

55903. RUBUS sp. Rosaceæ. **Raspberry.**

"(No. 5834. August 16, 1922.) A raspberry with large rich-green leaflets, collected on the Likiang Snow Range at an altitude of 11,000

A HANDSOME CHINESE PRIMROSE (PRIMULA SINOPURPUREA BALF. F.; S. P. I. No. 55899)

Because of its vigor and free-flowering habit in the high mountains of western China, where it is native, this primrose seems likely to be more satisfactory in cultivation than other members of the "nivalis" section of the genus, to which this species belongs. It was found by J. F. Rock in boggy meadows on the Likiang Snow Range in northern Yunnan at an altitude of 12,000 feet. The plant grows to a height of about 3 feet, and the flower stalks and lower surfaces of the thick dark-green leaves are covered with golden meal. In May the rich rosy purple, fragrant flowers, each about an inch in diameter, are produced in clusters of 6 to 12 or more. (Photographed by J. F. Rock, Yunnan, China, May, 1922; P30216FS)

A DROUGHT-RESISTANT ASIATIC PLUM (PRUNUS SP.; S. P. I. NO. 55901)

A hardy wild plum which is drought and heat resistant deserves trial as a stock for regions in the United States where dry hot summers combine with cold winters to make the growing of stone fruits very difficult. This species was discovered in limestone soil on the Likiang Snow Range, Yunnan, China, at an altitude of 10,500 feet, where it grows as a spreading tree 20 to 25 feet high. It bears a large number of round lemon-yellow fruits an inch in diameter. Its native region is subject at times to intense heat and drought, and snow falls in the winter. (Photographed by J. F Rock, September 1, 1922; P30289FS)

55896 to 55905—Continued.

feet. The yellow fruits the size of a thimble have a delicious flavor. The plant thrives in limestone soil."

55904. RUBUS sp. Rosaceæ.

"(No. 6057. August 24, 1922.) One of the finest species of Rubus on the Likiang Snow Range, where it grows at an altitude of 13,000 feet in forests of *Larix thibetica*. The orange-yellow fruits are larger than any of the cultivated species of Rubus and are rich in color, juice, and flavor."

55905. ROSA sp. Rosaceæ. **Rose.**

"(No. 5835. August 20, 1922.) A shrub 10 feet high, growing in meadows on the Likiang Snow Range at altitudes of 12,000 to 15,000 feet. It is a very ornamental plant, with red stems and red, curved, beadlike fruits. There are innumerable varieties, the flowers varying in color from creamy white to red."

55906. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. Watermelon.

From Palm City, Camaguey, Cuba. Seeds presented by Rudolph Russ. Received October 28, 1922.

Watermelon seeds introduced from Cuba for experimental purposes by department horticulturists.

55907. LEYCESTERIA GLAUCOPHYLLA (Hook f. and Thoms.) C. B. Clarke. Caprifoliaceæ.

From Darjiling, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Garden. Received October 23, 1922.

A slender plant, closely allied to the honeysuckles, with pale-green leaves and bearing in the early winter a profusion of pink flowers in short axillary spikes. It is native to the subtropical Himalayas at an altitude of 5,000 feet. (Adapted from *Gardeners' Chronicle, 1858, p. 700.*)

55908 to 55910.

From Darjiling, India. Seeds secured from G. H. Cave, curator, Lloyd Botanic Garden, by H. J. Elwes, Colesborn, Cheltenham, England, and presented by J. N. Rose, United States National Museum, Washington, D. C. Received October 20, 1922.

55908. OSBECKIA CRINITA Benth. Melastomaceæ.

A much-branched shrub 4 to 8 feet high, with small, narrow bristly leaves and large purple or pure-white flowers borne in terminal clusters. This plant is abundant at altitudes of 4,000 to 8,500 feet in the mountains of Sikkim and Bhutan, India. (Adapted from *Hooker, Flora of British India, vol. 2, p. 517.*)

55909. PIERIS FORMOSA (Wall.) D. Don. Ericaceæ.

A Himalayan bush, 15 to 20 feet in height, which bears large terminal clusters of white flowers resembling those of the lily of the valley. The glossy green foliage persists throughout the winter, making a very effective background for the flowers. (Adapted from *The Garden, vol. 79, p. 111.*)

55910. SYMPLOCOS GLOMERATA King. Symplocaceæ.

A shrub or small tree becoming 10 feet high, with narrow leathery leaves 6 inches long and axillary clusters of small white flowers. This shrub is rather common in the hills of Sikkim and Bhutan, India, at altitudes of 1,000 to 8,000 feet. (Adapted from *Hooker, Flora of British India, vol. 3, p. 577.*)

55911 to 55913. Davidia spp. Cornaceæ.

From Kew, England. Presented by Dr. A. W. Hill, director, Royal Botanic Gardens, Kew. Received November 2, 1922.

55911. Davidia involucrata Baill.

Budwood of a handsome tree from western China, where it reaches a height of 60 to 70 feet; in habit and foliage it resembles a linden. The bright-green oval leaves, 3 to 6 inches long, are sharply toothed and slender stalked, and the globular heads of small flowers, borne on slender nodding stalks about 2 inches long, appear in May and are made unusually striking because of the two or three large white bracts. These bracts are of unequal size, the largest being from 4 to 7 inches long and 2 to 4 inches broad. (Adapted from *Horticulture, vol. 10, p. 433.*)

For previous introduction, see S. P. I. No. 49668.

55912 and 55913. Davidia involucrata vilmoriniana (Dode) Hemsl.

This variety does not show any difference in flower characters from the preceding, but the leaves are smooth, and it may not prove as hardy as the typical form. (Adapted from *Horticulture, vol. 10, p. 433.*)

For previous introduction, see S. P. I. No. 52936.

55912. Seeds. **55913.** Budwood.

55914. Bertholletia nobilis Miers. Lecythidaceæ. Brazil nut.

From Santa Cruz de la Sierra, Bolivia. Seeds presented by Juan S. Bowles. Received November 1, 1922.

"The Brazil nut has never been successfully cultivated in any part of the United States, so far as known to us, and is probably too tropical in its requirements for even the mildest wintered sections of Florida and California. It may be possible to grow it in Porto Rico, the Canal Zone, parts of Hawaii, and the Philippines. Seeds received in past years have usually come from northern South America, where are found the principal centers of production. These seeds from Bolivia may yield trees which will be slightly less exacting in their requirements than those from regions nearer the Equator." (*Wilson Popenoe.*)

55915 to 55919. Amygdalus persica L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Angol, Chile. Plants presented by the Instituto Agrícola Bunster, Angol. Received November 7, 1922.

"In the orchards of central Chile are cultivated numerous peach varieties of local origin. Most of them are clingstones, for this type is more popular in that country, apparently, than the freestone. Some of them are of large size and fine quality. In fact, they compare very favorably with the best peaches of other countries.

"The peach growers of California are interested in securing the best available clingstone varieties for the production of fruit to be used for canning and preserving. To this end an effort is being made by this office to secure interesting sorts from all parts of the world. The Chilean varieties are worth a careful trial. The following descriptive notes are adapted from the nursery catalogue of the Instituto Agrícola Bunster." (*Wilson Popenoe.*)

55915. *Blanquillo de Mayo.* A very late, productive variety, with medium-sized fruits; excellent for preserves.

55916. *De Vino.* A very good clingstone variety whose season is in March. The fruits are very large, with very dark-red flesh.

55917. *Monstruoso amarillo de Viña del Mar.* A freestone variety which ripens in February. The very large fruits are of excellent quality.

55918. *O'Higgins.* A clingstone variety which ripens in March. The large fruits are a clear yellow.

55919. *Pavía blanco.* The large fruits are of good quality and are excellent for preserves or for drying. Season, February and March.

55920. PLOCAMA PENDULA Ait. Rubiaceæ.

From Orotava, Canary Islands. Seeds presented by Juan S. Bolinaga. Received November 10, 1922.

"A species of low-growing shrub found on the slopes of the arid hillsides in the Canary Islands. It has a most beautiful weeping habit, giving the plants the appearance of tiny weeping willows not over 2½ to 3 feet high. This would be very beautiful as a cover for dry hillsides overlooking the sea. It has already been brought into cultivation and will probably withstand severe drought." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 21611.

55921. POSOQUERIA LATIFOLIA (Rudge) Roem. and Schult. Rubiaceæ.

From Ancon, Canal Zone. Seeds presented by James Zetek. Received November 14, 1922.

"The very conspicuous white flowers of this rubiaceous plant have a sweet perfume somewhat like that of the orange jessamine (*Chalcas exotica* Millsp.)." (*Zetek.*)

A shrub, sometimes 25 feet high, native to the forests of northern Bahia, Brazil, where it grows in dry sandy soil with but little water. It flowers in February, and its succulent fruits, which ripen in July, are sold in the native markets for making marmalade and jelly. The greatest value of the shrub, however, lies in the finely grooved rigid branches, which are highly prized for walking sticks. These are exported to England under the name of "Brazilian oak." (Adapted from *Kew Bulletin of Miscellaneous Information, 1904, p. 9.*)

A handsome plant, worthy of general trial in tropical regions.

55922. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

From Angol, Chile. Seeds presented by the Instituto Agrícola Bunster, Angol. Received November 13, 1922.

"The melons of Chile, which ripen during the months of February, March, and April, are famous for their delicate flavor and remarkable keeping quality. Recently a number of them have been shipped from Valparaiso to New York, reaching the latter market in good condition. This seed is to be tested in our Southwestern States." (*Wilson Popenoe.*)

55923. PUNICA GRANATUM L. Punicaceæ. **Pomegranate.**

From Tangier, Morocco. Seeds presented by Jules Goffart. Received November 14, 1922.

"A variety of pomegranate with white flowers and fruits, which I found in Reunion. In flavor the fruit is slightly more acid than most varieties. When in flower and in fruit the tree is very ornamental." (*Goffart.*)

For previous introduction, see S. P. I. No. 40856.

55924. DIOSCOREA PENTAPHYLLA L. Dioscoreaceæ. **Yam.**

From Aulnay sous Bois, France. Tubers presented by Prof. R. de Noter, École d'Acclimatation de Recherches Agricoles. Received December 7, 1922.

Variety *Hortorum.*

"*Igname ronde de Chine* (round yam of China). The tubers made the first season, from plants grown from 'eyes' dug and replanted, weigh 1½ kg. each; the second year the tuber may weigh 4 to 5 kg. The plant requires light sandy clay or, better, calcareous, richly fertilized soil. The tubers are gathered at the first frost and stored in the cellar. Two years' storage does not injure but improves the tubers. This yam is an excellent vegetable of delicate flavor and makes delicious fritters, cakes, and soufflés. The leaves, after the harvest, are used as cattle feed." (*De Noter.*)

For previous introduction, see S. P. I. No. 52867.

55925. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Pummelo.**
(*C. decumana* Murr.)

From Buitenzorg, Java. Seeds presented by Dr. P. J. S. Cramer, Department of Agriculture, Buitenzorg. Received November 17, 1922.

"A red-fleshed pummelo of fair quality and well-developed color." (*Cramer.*)

For previous introduction, see S. P. I. No. 46336.

55926 to 55955.

From Yunnan, China. Collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received November 2, 1922. Quoted notes by Mr. Rock.

55926. ALEURITES sp. Euphorbiaceæ.

"(No. 6163. August 10, 1922.) Seeds of a tree 10 to 15 feet high, which grows wild on the lower slopes of the mountains of the Yangpi Valley, at an altitude of 6 600 feet. It is called *Tung-yu shu* by the natives; oil is obtained from the seeds and used for making oilcloth and also for burning."

55927 to 55929. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

55927. "(August 10, 1922.) Seeds of a half-wild peach growing near Yangpi, two days from Talifu. The tree is old, with large trunks; the large reddish and green fruits, 4 inches in diameter, are freestone, with firm, sweet, white flesh which becomes red near the seed."

55928. "(Yangpi. August 10, 1922.) Seeds of a half-wild peach growing near a temple. The fruits are 1½ to 2 inches in diameter, clingstone, very juicy and sweet."

55929. "(August 20, 1922.) Seeds of one of the largest fruited peaches I know of, found growing wild in the Likiang Valley. The pointed fruits are 3½ to 4 inches in diameter, clingstone, with firm white flesh of fair flavor."

55930. CASTANEA MOLLISSIMA Blume. Fagaceæ. **Chestnut.**

"(No. 6165. Yangpi. August, 1922.) Seeds of a tree about 40 feet high which grows along the lower western slopes of the Tsangshan Range of the Yangpi Mountains. The trunk is about 2 feet in diameter, and the long narrow leaves are sharply serrate."

55931. CATALPA DUCLOUXII Dode. Bignoniaceæ.

"(No. 3097. Near Nguluke. September 8, 1922.) Cuttings of a tree 70 to 80 feet high, with a diameter of 4 feet or more, growing at an altitude of 9,400 feet in the Likiang Valley. At this altitude the trees do not bear seed. It is a very handsome tree, bearing in early spring large clusters of pinkish purple flowers. The hard, durable wood is very valuable and is used for building purposes."

55932. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Hawthorn.**

"(No. 6166. Yangpi. August 10, 1922.) Seeds of a shrub 5 feet high, found at an altitude of 6,000 to 7,000 feet on the lower slopes of the mountains of the Yangpi Valley. The edible fruits are boiled with sugar and candied like jujubes. Native name 'Shan li ko' (mountain pear fruit)."

55933. HEMEROCALLIS FORRESTII Diels. Liliaceæ.

"(Nos. 3841 and 4546. August 27, 1922.) Seeds of a very handsome plant about 2 feet high, growing with *Incarvillea grandiflora brevipes* on the Likiang Snow Range at an altitude of 11,000 feet. It has a thick rootstock, narrow lanceolate leaves, and deep golden orange tubular flowers 2 to 3 inches long borne in many-flowered spikes. It flowers only in very early spring and is suited only for pure limestone soil.

55926 to 55955—Continued.

55934. INCARVILLEA GRANDIFLORA BREVIPES Sprague. Bignoniaceæ.

"(Nos. 4127, 4128, 6122. August 27, 1922.) Seeds of a gorgeous perennial, a foot or more in height, found growing at an altitude of 9,000 to 11,000 feet on the Likiang Snow Range. It has a thick stout rootstock, a large rosette of rich-green leaves, and flowers 3 inches wide. These flowers, which appear in March and April, have a long yellow calyx tube and a corolla which is a rich reddish purple or vermilion. This plant, one of the most striking of early spring, grows in snow-white magnesium-limestone soil."

For an illustration of this variety, see Plate III.

55935. LILIUM TIGRINUM Ker. Liliaceæ. **Tiger lily.**

"(Nos. 4889 and 5357. September 7, 1922.) Bulbs of an orange-flowered lily cultivated by the Mosos in Likiang for the bulbs, which are eaten as a vegetable; only the outer scales are sold, the inner part being kept for planting. This lily grows wild along watercourses in the Likiang Plain at an altitude of 9,000 feet. The numerous large flowers, orange with purple, are very attractive."

55936. MELIOSMA CUNEIFOLIA Franch. Sabiaceæ.

"(Nos. 4410, 4721, 6136. September 3, 1922.) Seeds of a beautiful flowering shrub or small tree 12 feet high, found growing at an altitude of 9,000 to 10,000 feet along watercourses on the northern end of the Likiang Snow Range, usually among limestone bowlders. In habit it resembles the weeping willow, with drooping branches bearing on their apices large pyramidal clusters of cream-colored flowers. During June and July this shrub is an object of great beauty."

55937. PÆONIA DELAVAYI Franch. Ranunculaceæ. **Peony.**

"(No. 6059. September 3, 1922.) Seeds of a very attractive vigorous shrub 4 feet high, growing in rather dry situations north of Likiang among limestone bowlders at an altitude of 9,800 feet. The deep-crimson flowers are 3 inches in diameter."

For previous introduction, see S. P. I. No. 55898.

55938. PAPYRIUS sp. Moraceæ.

"(No. 6162. Langkung. August 16, 1922.) Seeds of a shrub or small tree 10 feet high, which grows along streams at an altitude of 7,000 feet."

This genus includes the well-known paper mulberry.

55939. POLYGALA ARILLATA Buch.-Ham. Polygalaceæ.

"(No. 6167. Yangpi. August 10, 1922.) Seeds of an ornamental shrub 3 to 4 feet high, found growing on the lower mountain slopes at an altitude of 7,000 feet. The bright-yellow flowers are borne in long spikes, and the seed pods are small."

For previous introduction, see S. P. I. No. 49646.

55940. PRUNUS sp. Amygdalaceæ. **Cherry.**

"(September 8, 1922.) Seeds of a cherry tree 25 to 30 feet in height with a trunk 8 to 10 inches in diameter, which grows in the main gorge leading to the snow-capped peak Satseto (altitude 21,000 feet), among pure limestone rocks, at an altitude of 12,000 feet. The water in the stream bed of this gorge is like milk because of the limestone soil; in the winter the gorge is filled with ice.

"The leaves of this tree are flaccid and bluish green. The long-stemmed bright-red ovoid-oblong cherries appear very late, in September, and are borne singly in the axils of the leaves; the juicy, bitter, bright-red flesh is not firm, and the stone is small. This would probably make a good stock plant for alkaline regions."

55941. PRUNUS sp. Amygdalaceæ. **Plum.**

"(No. 6117. August 26, 1922.) Seeds of a wild plum tree about 20 feet high, which grows along banks of streams in the Likiang Plain at

55926 to 55955—Continued.

an altitude of 9,500 to 10,000 feet. The round lemon-yellow fruits are about an inch in diameter. The tree is a prolific bearer and grows in alkaline soil."

55942 to 55946. ROSA spp. Rosaceæ. **Rose.**

55942. ROSA sp.

"(Nos. 6125, 6127, 6128, 6129, 6130. August 30, 1922.) Seeds of a mixture of a number of closely related forms found in the limestone meadows of Saba, Likiang Snow Range, at an altitude of 11,000 feet. They are all shrubs 8 to 10 feet in height."

55943. ROSA sp.

"(No. 6121. August 28, 1922.) Seeds of a shrub 12 to 15 feet high, with long rambling branches, found along watercourses on the north end of the Likiang Plain at an altitude of 9,000 to 10,000 feet. It bears a large number of white flowers, which are followed by small ovoid orange fruits. When in bloom this shrub is a very striking object."

55944. ROSA sp.

"(No. 6126. August 30, 1922.) Seeds of a shrub 8 to 10 feet high, which grows in a limestone meadow called Saba, in the Likiang Snow Range, at an altitude of 11,000 feet. The flowers are either cream colored or red and the smooth fruits a dull red-brown."

55945. ROSA sp.

"(No. 6435. September 7, 1922.) Seeds of a lovely slender spineless shrub 8 to 10 feet in height, which grows in a deep gorge leading up to the main peak of the Likiang Snow Range, at an altitude of 6,000 feet, among spruce and fir forests and rhododendrons. The soil is usually much impregnated with lime. The shrub is very ornamental both in flower and in fruit. The single flowers are a deep rose red, and the yellow and scarlet shining fruits are long pear shaped."

55946. ROSA sp.

"(No. 6436. September 7, 1922.) Seeds of a slender, very attractive shrub which grows with the preceding No. 6435 [S. P. I. No. 55945] in the limestone gorge leading to the main peak of the Likiang Snow Range, at an altitude of 11,500 to 12,000 feet. The stems and branches are red and spineless except on the young shoots. The flowers are cream colored, and the crimson to carmine fruits are covered with a few soft bristles, are pear shaped, and about an inch in length."

55947. SCILLA sp. Liliaceæ.

"(No. 6169. Kiuho. August, 1922.) Bulbs of a liliaceous plant found growing at an altitude of 7,000 feet. It bears spikes of small rich-purple flowers."

55948 and 55949. VACCINIUM spp. Vacciniaceæ.

55948. VACCINIUM DELAVAYI Franch.

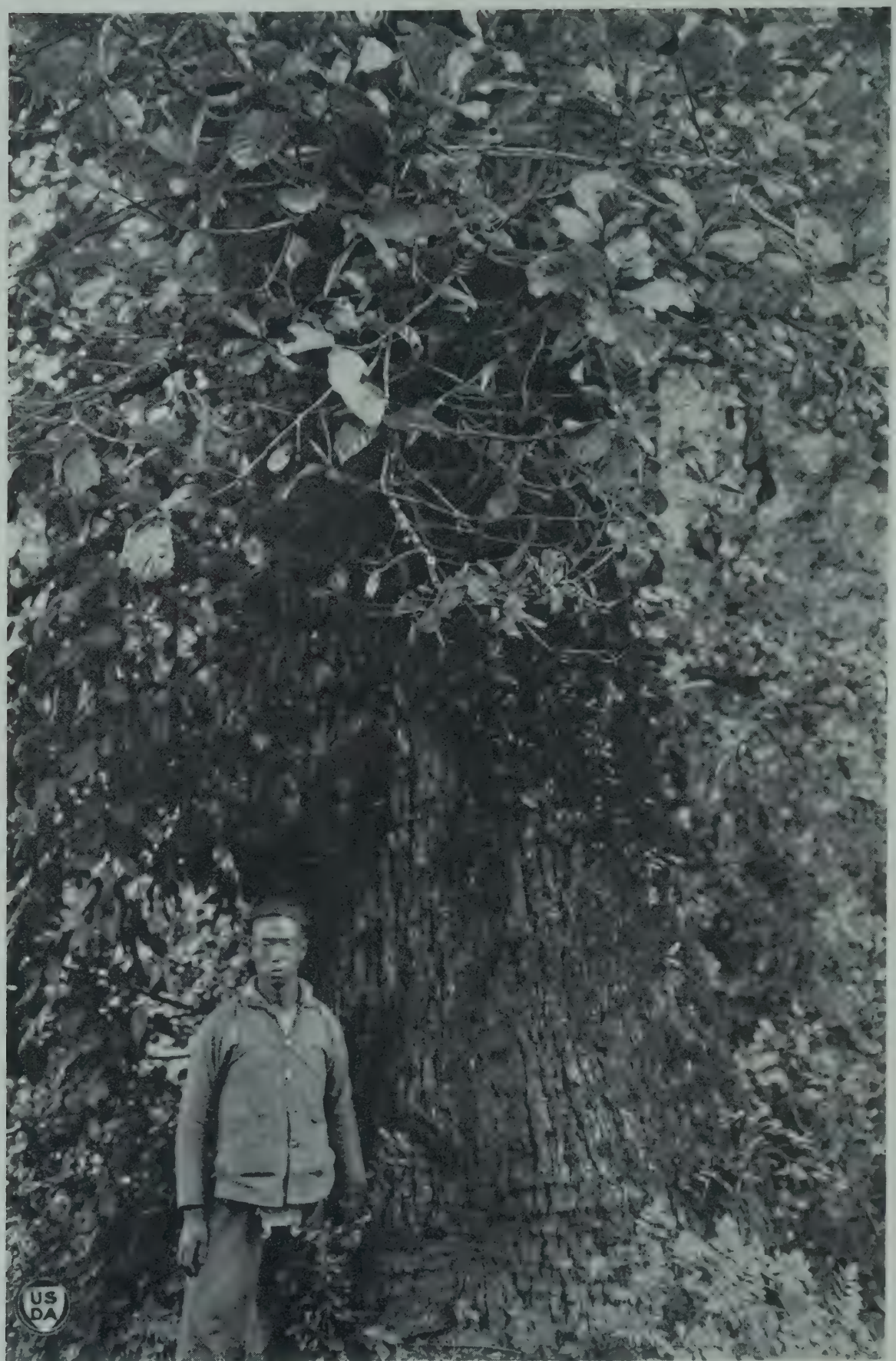
"(No. 6168. August 20, 1922.) Seeds of a very compact hardy shrub which grows on the Tsangshan Range at an altitude of about 8,000 to 9,000 feet. The edible berries, the size of small peas, are purplish black."

55949. VACCINIUM sp.

"(No. 6437. September, 1922.) Seeds of a shrub 2 feet high, which is very common from the Black River Valley to this locality (Likiang Snow Range), where it grows under pine trees. The flowers are a beautiful pink, and the edible dark-purple fruits, about the size of peas, are quite sweet."

A SHOWY ALPINE PLANT FROM WESTERN CHINA (INCARVILLEA GRANDIFLORA BREVIPES SPRAGUE; S. P. I. No. 55934)

For many years the typical form of this relative of our trumpet vine has been known to horticulturists, but the variety here shown was discovered only a few years ago in western China, whence it was sent to Europe. It is a rather small perennial, a foot or two in height, and differs from the type in having large brilliant-red flowers with canary-yellow markings in the throat, as well as in having more compact flower clusters. The plant illustrated was growing in pure limestone drift on the lower slopes of the Likiang Snow Range, Yunnan, China, at an altitude of 10,500 feet. (Photographed by J. F. Rock, June 2, 1922; P30260FE)



A CHESTNUT FROM THE MOUNTAINS OF SOUTHWESTERN CHINA (CASTANEA SP.; S. P. I. No. 56080)

In recent years the common chestnut, formerly a conspicuous feature of forests and roadsides in the northeastern United States, has almost disappeared, owing to the ravages of chestnut blight (*Endothia parasitica*), a disease for which no remedy has been discovered. In an effort to obtain blight-resistant chestnuts the Department of Agriculture has introduced from China a number of interesting species. The one here shown is a large tree, about 100 feet tall, with a trunk 5 feet in diameter. The edible nuts are small, but J. F. Rock, through whom the introduction has been made, reports them to be of sweet flavor. (Photographed by J. F. Rock, near Shiaoshuichi, Yunnan, China, September 29, 1922; P30306FS)

55926 to 55955—Continued.

55950 to 55952. VIBURNUM spp. Caprifoliaceæ.

55950. VIBURNUM sp.

"(No. 6061. September 7, 1922.) Seeds of a shrub 5 to 8 feet high, which is the most common Viburnum on the Likiang Plain; it grows almost everywhere, but especially along streams among limestone bowlders and on the lower slopes of the Likiang Snow Range at an altitude of about 10,000 feet. In early spring appear the cymes of white flowers, followed by the drooping clusters of rich red-crimson fruits. These fruits are quite acid, but are used for jams and jellies, giving the jelly a rich-red color. When in fruit the plant is very ornamental; the fruits, which ripen after the first frost, remain firm for two months."

55951. VIBURNUM sp.

"(No. 6160. Talifu. August 20, 1922.) Seeds of an ornamental shrub 5 to 6 feet high, with drooping branches, which grows at an altitude of 10,000 feet on the Tsangshan Range. The flowers are white to cream colored and the fruits black when ripe."

55952. VIBURNUM sp.

"(No. 6161. Ningai. August 10, 1922.) Seeds of an ornamental shrub 4 feet high, found growing on limestone rocks. The flowers are white with a pinkish tinge, and the fruits are black."

55953. VITIS sp. Vitaceæ. Grape.

"(No. 6286. September 7, 1922.) Seeds of a very hardy wild grape found covering rosebushes along streams among limestone bowlders in the northern end of the Likiang Snow Range at an altitude of 10,000 feet. The leaves are small, thick, and deeply three lobed. The vine is a prolific bearer. The small dull-purple fruits, a little larger than peas, with large seeds, are borne in racemes 3 to 4 inches long and are very sweet, with no acid taste."

55954. (Undetermined.)

"(No. 6164. August 10, 1922.) Seeds of a tree 30 to 40 feet high, with a trunk 3 to 4 feet in diameter, which grows in deep gulches in the Yangpi Mountains, near Talifu, at an altitude of 10,000 feet. The leaves and fruit resemble those of a Ziziphus."

55955. CORNUS sp. Cornaceæ.

"(September 3, 1922.) Seeds of an ornamental tree about 25 feet high, which grows in the Peshwe Valley, north of the Likiang Plain, at an altitude of 10,000 feet. The leaves are bright green above, white beneath, and the cream-colored flowers are in large cymes. The fruits are purplish black and very ornamental."

55956 to 55963.

From Likiang, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received November 4, 1922. Quoted notes by Mr. Rock.

55956. LONICERA XEROCALYX Diels. Caprifoliaceæ. Honeysuckle.

"(No. 5939. August 27, 1922.) A rare shrub 15 to 20 feet high, which grows at an altitude of 12,000 feet on an alpine meadow known to the Mosos as 'Ma hoang pa tze' (leech meadow). The shrub has horizontal branches, narrow leaves of a rich green, and large rich golden yellow flowers, which appear in May and June. It is an exceedingly handsome species. The small fruits are a tomato red."

55957. MECONOPSIS INTEGRIFOLIA (Maxim.) Franch. Papaveraceæ.

"(Nos. 3358, 3385, 6114. August 27, 1922.) A fine alpine plant 2 feet or more in height, found rather commonly at an altitude of 14,000

55956 to 55963—Continued.

to 14,500 feet among limestone bowlders on the Likiang Snow Range. The leaves are linear, with the basal ones forming a rosette, and covered with red hairs. The large bright-yellow flowers are 4 inches across."

55958 to 55963. Rosa spp. Rosaceæ. **Rose.**

55958. Rosa sp.

"(No. 6118. August 27, 1922.) A handsome shrub with pendent branches, which grows in fir and spruce forests at an altitude of 11,000 feet in the main gorge leading to one of the peaks (21,000 feet altitude) of the Likiang Snow Range. The flowers, which appear in April and May, are rich pink to mauve. The shrub fruits in August."

55959. Rosa sp.

"(No. 6119. August 27, 1922.) A wild rose from the Likiang Snow Range."

55960. Rosa sp.

"(No. 6120. August 27, 1922.) A shrub 15 to 18 feet high, with long rambling branches, found at an altitude of 10,000 feet on the northern end of the Likiang Plain. It is a very ornamental species, with large single white flowers and scarlet fruits covered with soft spines."

55961. Rosa sp.

" (No. 6086. August 27, 1922.) A shrub 4 to 5 feet high, with small leaves, found at altitudes of 13,000 feet and higher, in rocky limestone situations on the Likiang Snow Range. It has very attractive pink flowers."

55962. Rosa sp.

" (No. 6089. August 27, 1922.) A very ornamental shrub 4 feet high, growing on the Likiang Snow Range at an altitude of 13,500 feet. The stems and spines are red, as are also the flowers. The fruits are scarlet and yellow."

55963. Rosa sp.

" (No. 6096. August 27, 1922.) A very small spreading shrub, with small leaves, found at an altitude of 13,500 feet on steep alpine meadows of the Likiang Snow Range, in company with junipers, aconites, and spireas. The flowers are red, and the pear-shaped fruits are orange-red."

55964. Anneslia brevipes (Benth.) Lindm. Mimosaceæ.

(*Calliandra brevipes* Benth.)

From Rio de Janeiro, Brazil. Seeds presented by J. Simão da Costa. Received November 23, 1922.

"A shrub with beautiful flowers, native to the arid zone of northeastern Brazil." (*Da Costa.*)

The plants of this genus are very attractive because of their graceful feathery foliage and globose flower heads. These flower heads consist of very numerous long purplish stamens which almost entirely hide the small corollas. (Adapted from *Hooker, Journal of Botany, vol. 2, p. 138.*)

55965 to 55971. Pyrus spp. Malaceæ. **Pear.**

From Jamaica Plain, Mass. Trees presented by E. H. Wilson, Arnold Arboretum. Received November 11, 1922. Quoted notes by Mr. Wilson.

55965. Pyrus calleryana dimorphophylla (Makino) Koidz.

" (No. 9635 W.) A variety which forms a tree about 30 feet high with a trunk about a foot in diameter, growing at Hazu, Ise Province, Japan. This tree was raised from seeds collected for me by the Yokohama Nursery Co. in the autumn of 1917."

55965 to 55971—Continued.

55966 to 55970. PYRUS USSURIENSIS Maxim.

55966. "(No. 10657 W.) A variety with small edible fruits. These trees were raised from seeds which I purchased at Pukchin, Province of Keiki, Chosen, August 25, 1918."

55967. "(No. 11254 W.) A variety with small pear-shaped to round fruits. These trees were raised from seeds collected for me by T. Ishidoya at Keijo, Province of Keiki, Chosen, in the late autumn of 1918."

55968. "(No. 11260 W.) *Ishi-nashi.* A stone pear collected for me by H. Suzuki at Yamanaka, Mount Fuji, Japan, in the late autumn of 1918."

55969. (No. 11261 W.) *Pin li.* A flat short-stemmed pear, collected for me by the Yokohama Nursery Co. at Yugakujo, Manchuria, in the late autumn of 1918."

55970. "(No. 11262 W.) *Champa li* (long peduncled). A variety collected for me by the Yokohama Nursery Co. at Mukden, Manchuria, in the late autumn of 1918."

55971. PYRUS USSURIENSIS HONDOENSIS (Kik. and Nak.) Rehder.

"(No. 11266 W.) *Yama-nashi.* A variety collected for me by the Yokohama Nursery Co. at Nagano, Japan, in the late autumn of 1918."

55972 to 55974.

From Freetown, Sierra Leone, Africa. Seeds presented by W. N. Martin, Albert Academy, U. B. C. Received November 17, 1922.

55972. AMARANTHUS sp. Amaranthaceæ.

"A green variety used like spinach." (*Martin.*)

55973. CORCHORUS OLITORIUS L. Tiliaceæ.

This species appears to be important as a vegetable and is cultivated in many tropical countries for that purpose. In Nigeria and Uganda the leaves are used in soups, and in Sierra Leone the plant is used as a potherb. The young and tender leaves are used in salads. (Adapted from *Holland, Useful Plants of Nigeria, pt. 1, p. 115.*)

For previous introduction, see S. P. I. No. 52891.

55974. SYNTHERISMA EXILIS (Kippist) Newbold. Poaceæ. Fundi.

"An annual grass, much resembling crabgrass, grown by Nigerian tribes as a supplementary food grain. This grass, called by natives 'fundi,' is often grown in the millet fields and yields a crop of fine seed which is made into flour for the preparation of a kind of porridge. Fundi was known in Africa in 1798, but it was first brought into England in 1842 by R. Clarke, who describes the grain as about the size of mignonette seed. It is sown in May or June, carefully weeded in August, and ripens in September. The plant grows to a height of 18 inches, and the slender stems bend to earth by the weight of the grain. It prefers light or even rocky soil. Clarke says the grain is 'delicious' for food. Fundi was tested at McNeill, Miss., in 1920, and it is believed that it will give from three to five cuttings of hay in a season or a larger amount of pasturage." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 52736.

55975. PHYLLOSTACHYS AUREA Carr. Poaceæ. Bamboo.

From Ermitage, Mons, Belgium. Seeds presented by J. H. de LeHaie. Received November 28, 1922.

"Height 10 to 15 feet; stems one-half to 1 inch in diameter, greenish yellow when young, becoming golden with age, erect, stiff; joints much shortened toward the base; branchlets slender, greenish yellow, becoming darker yellow

as the plant grows older, usually set at a rather acute angle; leaves 2 to 4 inches long, light green above, grayish beneath, one edge serrate, the other smooth; sheaths deciduous, marked with purplish spots and blotches.

"A handsome ornamental form, fairly hardy, and grown generally in public gardens throughout the world. This was one of the earliest introduced forms in California and is found there in many gardens. It is said to be quite drought resistant and with a little protection will survive the winters as far north as Washington, D. C." (*B. T. Galloway.*)

55976. ZEA MAYS L. Poaceæ. **Corn.**

From Buenos Aires, Argentina. Presented by D. S. Bullock, Agricultural Commissioner, Bureau of Agricultural Economics. Received November, 28, 1922.

"From Entre Rios, Argentina." (*Bullock.*)

Maiz amargo (bitter corn). A variety of corn said to have been introduced into Argentina from Hungary in 1902, since which date it has become quite popular in some parts of northern Argentina because of its resistance to the attacks of locusts. A characteristic of this variety which distinguishes it from other varieties is its tendency to stool or produce side shoots. Unless planted close, each plant will produce under favorable conditions from 4 to 10 of these shoots. The leaves are often over 3 feet long and sometimes 4 inches wide and the stalks from 6 to 10 feet tall. There are two forms noted in Entre Rios, one with grayish white kernels and one with yellow kernels, the latter having longer ears than the former. Because of the numerous intergradations, however, it is very difficult to obtain typical ears of either form. The growing season of *maiz amargo* is long, sometimes as long as nine months. In Entre Rios it is sown in November. (Adapted from *Report No. 76, D. S. Bullock, Agricultural Commissioner.*)

55977. ARACHIS HYPOGAEA L. Fabaceæ. **Peanut.**

From Sydney, New South Wales. Seeds presented by G. W. Valder, undersecretary and director, Department of Agriculture. Received November 28, 1922.

"These seeds were originally sent from the United States under the name 'Mammoth.' The Chinese claim that this variety is too large for their purpose." (*Valder.*)

Introduced for the use of specialists in the Department of Agriculture.

55978. EUGENIA DOMBEYI (Spreng.) Skeels. Myrtaceæ. (*E. brasiliensis* Lam.) **Grumichama.**

From Hilo, Hawaii. Seeds presented by Bro. Matthias Newell. Received October 23, 1922.

"The grumichama is found both wild and cultivated in southern Brazil, particularly in the States of Parana and Santa Catharina. Elsewhere, with the exception of Hawaii, it is scarcely known.

"The tree, which grows to the same size as the orange, is shapely and attractive in appearance, with ovate-elliptic, glossy deep-green leaves 2 to 3 inches long. The small white flowers are followed by pendent fruits, round or slightly flattened, the size of a cherry and deep crimson in color. The persistent green sepals which crown the apex are a distinguishing characteristic. The skin is thin and delicate, the flesh soft, melting, of a mild subacid flavor suggesting that of a Bigarreau cherry. The seeds are round or hemispherical when one or two in number; sometimes there are three or more, in which case the size is reduced and they are angular.

"The rapidity with which the fruits develop is surprising; within a month from the time of flowering they have reached maturity and are falling to the ground. Father Tavares states that all the trees do not ripen their crops at the same time, some blooming later than others and thus extending the fruiting season from November to February (in Brazil). Three varieties are distinguished by him, one with dark-red flesh, another with vermilion, and the third with white. All three are said to be equally good in quality. The fruit is usually eaten fresh, but may also be used to make jams and preserves.

"The grumichama (sometimes *grumixama*, to conform to old Portuguese orthography) has recently been planted in California and Florida. In the latter State it has withstood a temperature of 26° F. without injury, which indicates that it is subtropical, rather than strictly tropical, in character. It prefers a deep sandy loam, but succeeds in Florida on shallow sandy soils. Vaughan MacCaughey says: 'In the Hawaiian Islands it is usually about 20 feet high. It requires considerable moisture for its best development, as do all the Eugenias in our flora; the largest crops are borne by plants at the lower levels, up to 300 feet * * * flowering and fruiting continue from July until December, the main crop coming in the fall * * *. The first plants in Hawaii were probably introduced by the Spaniard Don Francisco de Paula Marin, who came to the islands in 1791.' The grumichama is sometimes listed as *Eugenia brasiliensis* Lam. *Stenocalyx brasiliensis* Berg. is another synonym.

"Seedlings are said to commence fruiting when 4 or 5 years old. They grow rather slowly. No one appears to have budded or grafted the species as yet. For its value as an ornamental plant, as well as for its pleasant fruit, the grumichama deserves cultivation throughout the Tropics and Subtropics." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 54777.

55979 to 55981. MYRCIARIA spp. Myrtaceæ.

From Rio de Janeiro, Brazil. Seeds presented by P. H. Rolfs, director, Escola Superiór de Agricultura e Veterinária, Vicosa, Minas Geraes, Brazil. Received December 21, 1922.

55979. MYRCIARIA sp.

Jaboticaba.

The jaboticaba (*Myrciaria cauliflora*) is doing very well in Florida, and these seeds are introduced for testing in that State.

55980. MYRCIARIA sp.

Jaboticatuba.

"The fruits of this variety are much larger than those of the ordinary jaboticaba." (*Rolfs.*)

55981. MYRCIARIA sp.

Jaboticaba.

The jaboticaba (*Myrciaria cauliflora*), one of the commonest and most popular fruits of the vicinity of Rio de Janeiro, Brazil, now appears to be thriving in southern Florida, and these seeds are introduced for cultural experiments in that State.

55982. GUILIELMA UTILIS Oerst. Phœnicaceæ. **Pejibaye.**

(*Bactris utilis* Benth. and Hook.)

From Limon, Costa Rica. Seeds presented by C. P. Chittenden, manager, United Fruit Co. Received November 16, 1922.

"A red-striped variety of pejibaye of very good eating quality." (*Chittenden.*)

For previous introduction and description, see S. P. I. No. 55807.

55983 to 55992.

From Yunnan, China. Collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received November, 1922. Quoted notes by Mr. Rock.

55983. CASTANEA sp. Fagaceæ. **Chestnut.**

"(No. 6256. Yangpi. September 19, 1922.) Seeds of a tall tree 40 feet or more in height, with a trunk 2 feet in diameter, found wild on the southwestern slopes of the Tsangshan Range at altitudes of 8,000 to 9,000 feet. The nuts, very sweet and of delicious flavor, are numerous in the burs, and the strong healthy trees are prolific bearers."

55983 to 55992—Continued.

55984. CASTANEA sp. Fagaceæ. **Chestnut.**

"(No. 6256a. September, 1922.) Seeds of tall trees found wild in the valleys of the Haitung Range, east of the Tali Lake, at an altitude of 8,000 feet. The nuts are larger than those from the mountains near Yangpi, but both are very sweet and delicious in flavor."

55985. CHAENOMELES sp. Malaceæ. **Chinese quince.**

"(Talifu. September 19, 1922.) Seeds of a quince, called in Chinese *Mu kua*, cultivated around Talifu. The tree is 50 to 80 feet tall, with a large trunk. The very aromatic fruits, rich yellow with a reddish tinge, have very firm, hard, yellow flesh."

55986. COLOCASIA ESCULENTA (L.) Schott. Araceæ. **Dasheen.**

"(Talifu. September 22, 1922.) Tubers of a Chinese vegetable called *Yee-tao*, sold in the Talifu market. The plant is grown in dry ground, like corn or wheat, and not flooded. The tubers grow in great numbers around the base of the stem; they are white and mealy and eaten boiled, like potatoes. The flower stalk is about 2 feet long, of a pinkish mauve color, with a slender spathe of the same color, and with cream-colored flowers; the whole is eaten as a vegetable, either fried or boiled."

55987. CORYLUS sp. Betulaceæ. **Hazelnut.**

"(No. 3292. Nguluke. September 11, 1922.) Seeds of a tree 60 to 80 feet in height, with trunks 2 to 3 feet in diameter, found at altitudes of 9,500 to 10,000 feet among limestone bowlders near springs at the foot of the Likiang Snow Range. The tree is handsome, with very large leaves, and bears large edible nuts.

55988. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Hawthorn.**

"(Talifu. September 20, 1922.) Seeds of a shrub 6 to 8 feet high, obtained from fruits sold in the Talifu market, where they are strung on fiber. These small applelike fruits mature in September. They have large seeds and rather sour flesh and are candied like jujubes. Chinese name *Shan li ko*."

For previous introduction, see S. P. I. No. 55932.

55989. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

"(Yangpi. September, 1922.) Seeds of wild walnut trees 40 to 50 feet in height, with a spread of nearly a hundred feet, found in the mountains at an altitude of 8,000 feet. The nuts are large, thin shelled, and sweet."

For previous introduction, see S. P. I. No. 54790.

55990. MALUS sp. Malaceæ. **Apple.**

"(No. 6558. Chienchuan, September 15, 1922.) Seeds of a wild apple, tree 20 feet high, with stiff spreading branches, found in a dry, hot, rocky location in the Chienchuan Valley north of Talifu. The fruits are a little larger than a pea, glossy as if varnished, bright red on one side and yellow on the other."

55991. MECONOPSIS INTEGRIFOLIA (Maxim.) Franch. Papaveraceæ.

"(Likiang. September, 1922.)"

For previous introduction and description, see S. P. I. No. 55957.

55992. OSTEOMELES SCHWERINAE C. Schneid. Malaceæ.

"(No. 6554. Langchiung. September 16, 1922.) Seeds of an ornamental, spreading shrub 2 to 3 feet high, found in the Langchiung Mountains at an altitude of 7,500 feet and common in the arid regions north and south of Talifu. It differs considerably from the Pacific species, *Osteomeles anthyllidifolia;* the flowers are pinkish white and very fragrant, and the sweet edible fruits are uniformly dull purple."

For previous introduction, see S. P. I. No. 40033.

55993. FRAXINUS MICRANTHA Lingelsh. Oleaceæ. **Ash.**

From Dehra Dun, India. Seeds presented by R. S. Hole, forest botanist. Received December 21, 1922.

A Himalayan ash with large leathery leaves about 9 inches long and lax terminal panicles of minute flowers. It is very similar to another Himalayan species, *Fraxinus floribunda*, from which it differs in leaf characters and in having a looser panicle. (Adapted from *Engler, Botanische Jahrbücher, vol. 40, p. 217.*)

55994 to 56018.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received November 21, 1922. Quoted notes by Mr. Rock.

55994. PÆONIA DELAVAYI Franch. Ranunculaceæ. **Peony.**

"(Nguluke. September 12, 1922.)"

For previous introduction and description, see S. P. I. No. 55898.

55995. PRIMULA BULLEYANA Forrest. Primulaceæ. **Primrose.**

"(Heshwe. September, 1922.) Seeds of a very attractive primula collected three days' journey north of Likiang at an altitude of 9,000 to 11,000 feet. It is not a bog-loving plant but grows in pine forests."

55996. PYRACANTHA sp. Malaceæ. **Fire thorn.**

"(Likiang. September 11, 1922.) Seeds of a shapely shrub 10 to 15 feet in height, which grows along stream beds in limestone soil throughout the Likiang Plain. It is common all along the road from Talifu to Likiang, and even south of Likiang. When in flower it is very ornamental, but it is especially attractive when loaded with its bright-scarlet fruits from August until winter."

55997. PYRACANTHA sp. Malaceæ. **Fire thorn.**

"(No. 6527. September 14, 1922.) Seeds of a dense shrub 6 to 8 feet in height, which grows with *Prinsepia utilis* in arid situations in the valley beyond Lashipa, two days' journey south of Likiang. It has bright-yellow berries instead of the scarlet fruits which are so common."

55998 to 56016. PYRUS spp. Malaceæ. **Pear.**

"All these wild pears, of which I am sending seeds, are used as stock plants; they are not planted, but are so numerous that the Chinese simply cut them down and bud them. The best pears come from the region between Tienwei, Talifu, and Haitung."

55998. PYRUS sp.

"(No. 6503. Lashipa. September 13 and 14, 1922.) A very hardy pear tree 15 to 20 feet high, found on the Lashipa Plain, one day's travel south of Likiang, at an altitude of 10,000 feet. It has very tough branches, small, oval-oblong, crenate, acute leaves, and bears large numbers of fruits which are the size of small marbles, yellow, acrid, and unpalatable. The tree is generally used by the natives as a stock plant. Wherever the tree grows wild they cut the trunk down to 2 feet from the ground and bud cultivated varieties of pears on it. The tree is exceedingly hardy and drought resistant and also can withstand being inundated."

55999. PYRUS sp.

"(No. 6508. Likiang. September 13, 1922.) A tree 20 feet tall, which is wild all over the region north of Talifu; collected near the village of Luchu on the southwest end of the Likiang Plain. The leaves are oblong, dark green with red veins and petioles, glossy above, acute or rounded at the base and apex. The fruits are the size of marbles, yellowish brown and spotted, acrid, and unpalatable. This tree had a cultivated variety budded on it; the lower branches were loaded with the wild fruit, and the main trunk had an unripe pear of the cultivated variety."

55994 to 56018—Continued.

56000. PYRUS sp.

"(No. 6509. September 13, 1922.) A wild pear tree 20 feet high, found on the Likiang Plain near the village of Lasadje. The leaves do not have red veins and petioles, and the fruits, which are smaller than a marble, are yellow, spotted, acrid, but perfectly black and sweet when ripe. This is a very good stock plant."

56001. PYRUS sp.

"(No. 6511. Lashipa. September 13, 1922.) A wild pear tree 15 to 20 feet high, from dry hillsides at an altitude of 9,000 feet, where it grows with *Pinus sinensis*. The leaves are small, oval-elliptical, with long stems. The small, yellowish brown fruits are the size of marbles."

56002. PYRUS sp.

"(No. 6539. September 15, 1922.) A wild pear tree 25 to 30 feet high, found in the hot valley of Nankaochai near Chienchuan Valley, two and one-half days' journey south of Likiang, at an altitude of 7,000 feet. It has long spreading whiplike branches and very numerous brownish yellow fruits the size of marbles, which are black when fully ripe."

56003. PYRUS sp.

"(No. 6553. September 15, 1922.) A wild pear tree 40 feet in height, found in arid regions in the mountains west of Tengchuan, two days' journey north of Talifu, at an altitude of 6,500 to 7,000 feet. The branches are long and mostly horizontal. The fruits are much larger than those of the other wild pears, with a rich yellowish brown skin and firm butter-yellow flesh which is acrid and unpalatable, though juicy. This species is quite rare; I have seen only two trees."

56004. PYRUS sp.

"(No. 6555. September 15, 1922.) A tree 40 feet high with rambling and ascending branches, found in a dry region of yellow clay or loam on a hillside beyond Tienwei, three days' journey south of Likiang. This species is very rare, only one tree being seen, and is quite distinct from the other wild pears. The long-stemmed solitary fruits, smaller than a coffee berry, were few in number, oblong, and uniformly crimson."

56005. PYRUS sp.

"(No. 6556. September 16, 1922.) A wild pear tree 15 to 20 feet high, of very graceful habit and spineless, found in the Langchiung Valley near the Erhyin River, two days' journey north of Talifu. The leaves are bright green on both sides, and the bright yellowish brown fruits, larger than a marble, are juicy but acrid. The Chinese use this as a stock plant."

56006. PYRUS sp.

"(No. 6557. Langchiung Valley. September 16, 1922.) A wild pear tree 25 feet high, spineless, with dark-green, crenate, elliptic leaves and round, russet-brown, juicy, acrid fruits the size of small marbles and similar to those of No. 6556 [S. P. I. No. 56005]. The tree is a prolific bearer and is used here as a stock plant."

56007. PYRUS sp.

"(No. 6559. September 15, 1922.) A wild pear tree 25 to 30 feet high, with a stout trunk and stiff, spreading branches, found in the dry mountain range south of Chienchuan, three days' journey north of Talifu. The numerous fruits are about half an inch in diameter, greenish brown with lighter spots. A good stock plant."

The following are seeds of domesticated varieties.

56008. PYRUS sp.

"(Talifu. September 20, 1922.)"

55994 to 56018—Continued.

56009. PYRUS sp.

"(Haitung, east of Tali Lake. September, 1922.)"

56010. PYRUS sp.

"(Haitung. September, 1922.)"

56011. PYRUS sp.

"(Haitung. September 19, 1922.)"

56012. PYRUS sp.

"(Talifu. September 20, 1922.)"

56013. PYRUS sp.

"(Tienwei. September 15, 1922.)"

56014. PYRUS sp.

"(Tienwei. September 15, 1922.)"

56015. PYRUS sp.

"(Tienwei. September 15, 1922.)"

56016. PYRUS sp.

"(Tienwei. September 15, 1922.)"

56017. ROSA sp. Rosaceæ. **Rose.**

"(No. 6504. September 14, 1922.) Seeds of a spreading shrub or climber with huge rambling branches, 25 feet high with a spread of 30 feet or more, found growing wild, with *Rosa banksiae*, all over the Lashipa Plain, one day's trip south of Likiang. The flowers when first opened are yellow, becoming cream colored and the size of a half dollar. The orange-red fruits are borne in large ample panicles. The shrub is very ornamental in flower and in fruit."

56018. STYRAX LANGKONGENSIS W. W. Smith. Styracaceæ.

"(No. 3198. Langchiung. September 18, 1922.) Seeds of an ornamental shrub 1 to 2 feet tall, which grows in the arid region between Langchiung and Shapi, at an altitude of 7,500 feet. The flowers are large, white, and drooping, with rich reddish brown calyxes."

56019. PRIMULA CHRYSOPA Balf. f. and Forrest. Primulaceæ. **Primrose.**

From Ness, Neston, England. Seeds presented by A. K. Bulley. Received November 22, 1922.

"Come over and see *Primula chrysopa* next spring. It's a thing to say your prayers to." (*Bulley.*)

A tufted perennial marsh-loving primrose from the Province of Yunnan, China, where it grows in moist stony alpine meadows. It has oblong, bright-green, somewhat fleshy, long-stemmed leaves and very attractive fragrant flowers borne in two to four flowered umbels on the summit of the slender scape. The calyx is green or purplish and the oblique corolla pale lilac with a golden eye. The entire plant is more or less covered with a white mealy powder. (Adapted from *Transactions of the Botanical Society of Edinburgh, vol. 27, p. 277.*)

56020. GUILIELMA UTILIS Oerst. Phœnicaceæ. **Pejibaye.**

(*Bactris utilis* Benth. and Hook.)

From San Jose, Costa Rica. Seeds purchased through Otón Jiménez. Received December 19, 1922.

A shipment of seeds of the pejibaye. For an extended account of this interesting food palm, see the Journal of Heredity, vol. 12, pp. 154–166, April, 1921.

For previous introduction, see S. P. I. No. 55982.

56021. ESCALLONIA PHILIPPIANA (Engler) Masters. Escalloniaceæ.

From Exeter, England. Plants purchased from Robert Veitch & Son, The Royal Nursery. Received November 25, 1922.

This ornamental shrub, native to Chile, is the hardiest of all the Escallonias, and unlike the other species is deciduous. It forms a spreading shrub with gracefully arching branches and has small dark-green leaves which serve admirably as a background for the pretty star-shaped white flowers. (Adapted from *Gardening Illustrated, vol. 38, p. 501.*)

56022. WARSZEWICZIA COCCINEA (Vahl) Klotzsch. Rubiaceæ.
Scarlet plume.

From Gamboa, Canal Zone. Seeds presented by F. Marti. Received November 28, 1922.

"This is a remarkable ornamental tree; I first saw it on the banks of Gatun Lake at Rio Sucio. At a distance its racemes, over 2 feet long, with their brilliant-scarlet enlarged sepals, produced a startling splash of color against the dark-green foliage. The color is as vividly scarlet as the autumn colors of the sour gum, the sorrel tree, or some species of Japanese maple. The colored 'leaves' are in reality enlarged sepals. Only one flower in each cluster of flowers on the raceme has an enlarged sepal. Though the flowers themselves are not over a quarter of an inch in diameter, the enlarged sepals are often 2½ inches long. The fact that this tree blooms in summer, the wet season, whereas most of the showy flowering trees of the Tropics bloom in the dry season, would seem to make this an unusually valuable ornamental tree for tropical regions. It is certainly worthy of a place in every collection of tropical trees." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 54297.

56023. FRAGARIA CHILOENSIS (L.) Duchesne. Rosaceæ.
Chilean strawberry.

From Guayaquil, Ecuador. Seeds presented by Dr. F. W. Goding, American consul general. Received December 7, 1922.

"These seeds were obtained at Guachi, near Ambato. While the fruit of the Chilean strawberry is inferior in flavor to that of our best cultivated strawberries, it is remarkable for its excellent shipping and keeping qualities; and it seems that varieties might be produced by selection which would merit cultivation on a commercial scale.

"The berry is much used for canning and preserving. It is also eaten fresh. It is a curious circumstance that this species of strawberry, whose fruits are commonly an inch to an inch and a half long, should be called *frutilla* (little fruit) in Chile, Peru, and Ecuador, while the much smaller fruit of *Fragaria vesca*, rarely over one-half an inch long, is termed *fresa*, or strawberry. This last-named species is cultivated commercially at Quillota, Chile, whence the fruit, which ripens earlier than that of *F. chiloensis*, is sent to the markets of Santiago.

"As far as I can ascertain by careful examination of the plants and fruits, the *frutillas* of Chile, Peru, and Ecuador are the same species. Neither in Peru nor in Chile, however, do the plants bear all through the year as they do on the sandy plains near Ambato, Ecuador. I imagine the difference in climatic conditions is the cause of this; on the Equator there are no well-defined seasons, and the plants remain active throughout the year, while in Chile the seasons are fairly well defined and vegetative activity ceases during a part of each year, as with us. The ripening season of *F. chiloensis* in the highlands of southern Peru and central Chile seems to extend, approximately, from the latter part of October to January." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 54630.

56024. CORNUS OFFICINALIS Sieb. and Zucc. Cornaceæ.

From Rochester, N. Y. Seeds presented by John Dunbar, Assistant Superintendent of Parks. Received December 8, 1922.

"This resembles *Cornus mas* when in flower, but the fruits ripen in October and November and are quite handsome." (*Dunbar.*)

This species, which is very closely allied to *C. mas*, is native to Chosen and is occasionally seen in cultivation. Like *C. mas*, it has yellow flowers and red fruits, but differs in having conspicuous patches of dense, rust-colored down on the lower surfaces of the leaves and also is somewhat coarser in habit.

56025. CUCURBITA MOSCHATA Duchesne. Cucurbitaceæ. **Squash.**

From Libia, North Africa. Seeds presented by Dr. E. O. Fenzi. Received December 8, 1922.

"Seeds of a local variety which weighs about 50 kilos (110 pounds). It is very popular with the natives, and with good reason, for the flesh is more intensely colored, sweeter, and of better flavor than any other variety I can remember having seen either in Italy or California." (*Fenzi.*)

56026. ORYZA SATIVA L. Poaceæ. **Rice.**

From Samarlkota, India. Seeds presented by Dr. R. H. Forbes, Kulikoro, French West Africa. Received June 13, 1922. Numbered December, 1922.

"Rice from Samarlkota, Madras Presidency, India." (*Forbes.*)

Introduced for department specialists engaged in rice-breeding experiments.

56027. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor-bean.**

From Albion, Brisbane, Queensland. Seeds presented by W. Ewart, secretary, Queensland Acclimatisation Society. Received December 8, 1922.

"*Bowen Hills.* This variety was raised from seeds obtained by the Queensland Acclimatisation Society from Bowen Hills and grown at Lawnton, Queensland, where it is considered the best of 60 varieties there cultivated. The plant is a vigorous grower, forms numerous large seed heads, and is remarkably free from disease and insect pests." (*Ewart.*)

56028. DAVIDSONIA PRURIENS F. Muell. Cunoniaceæ.

From Sydney, New South Wales. Seeds presented by J. H. Maiden, director and Government botanist, Botanic Gardens, Sydney, at the request of C. T. White, Government botanist, Brisbane. Received November 14, 1922.

Variety *jerseyana.* This variety differs from the northern Queensland form in being smaller in all its parts.

The northern form is a tree 30 or 40 feet high, of graceful erect habit, with drooping compound leaves 18 inches or more long; the terminal leaflet is often a foot in length. The reddish flowers are in clusters a foot or more long, and the fruit is an oval juicy drupelike berry the size of a goose egg, covered with a thin coating of irritating hairs; these, however, are easily removed by rubbing with a rough cloth, and then is exposed the smooth plumlike skin of the fruit. The soft, fleshy, rich-purple pulp, sharply acid in flavor, incloses a few small flat seeds. This fruit, which ripens in July in Queensland, is largely used by the settlers for making into jam and jelly. (Adapted from *Queensland Agricultural Journal, vol. 2, p. 471,* and *Bailey, Queensland Flora, pt. 2, p. 538.*)

56029. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Ayr, Ayrshire, Scotland. Seeds purchased from McGill & Smith. Received December 8, 1922.

Locally grown seed introduced for department specialists engaged in timothy-breeding investigations.

56030. CUCUMIS SATIVUS L. Cucurbitaceæ. **Cucumber.**

From Balavaini, Marovo Lagoon, Solomon Islands. Seeds presented by H. T. Fairbrother. Received December 18, 1922.

"Seeds of our native cucumber, which is far ahead of any other I have ever tasted. It is of medium size, with a smooth skin and an incomparable flavor." (*Fairbrother.*)

56031. Chrysophyllum magalismontana Sond. Sapotaceæ.

From Pretoria, Transvaal. Seeds presented by I. B. Pole Evans, chief, Division of Botany. Received December 18, 1922.

An ornamental evergreen shrub or small tree which is common on stony outcrops in the Transvaal on frostless ridges at an altitude of 6,000 feet near Johannesburg and also in the "Middle Veld" at altitudes below 4,000 feet. The fruits, up to an inch in diameter, are agreeably acidulous and most refreshing in hot weather; they are used by the white colonists for making preserves and jelly. The natives call the tree *Stam-vruchte*, because the flowers and fruits are borne on very short stalks on the stem and main branches. The tree tolerates great heat and drought. (Adapted from *note of J. Burtt Davy under S. P. I. No. 19384.*)

For previous introduction, see S. P. I. No. 19384.

56032 to 56057. Triticum aestivum L. Poaceæ. Common wheat.

(*T. vulgare* Vill.)

From Tulun, Irkutsk, Russia. Seeds presented by Victor Pissareff, director of the Agricultural Experiment Station. Received December 9, 1922.

"These varieties of winter wheat have endured the winter at Tulun, which is considered beyond the northern limit of wheat growing." (*Pissareff.*)

56032. *Tulun 365.*
56033. *Tulun 366.*
56034. *Tulun 367.*
56035. *Tulun 370.*
56036. *Tulun 373.*
56037. *Tulun 375.*
56038. *Tulun 377.*
56039. *Tulun 379.*
56040. *Tulun 380.*
56041. *Tulun 382.*
56042. *Tulun 383.*
56043. *Tulun 384.*
56044. *Tulun 385.*
56045. *Tulun 389.*
56046. *Tulun 390.*
56047. *Tulun 392.*
56048. *Tulun 398.*
56049. *Tulun 403.*
56050. *Tulun 408.*
56051. *Tulun 405.*
56052. *Tulun 416.*
56053. *Tulun 418.*
56054. *Tulun 425.*
56055. *Tulun 456.*
56056. *Tulun 457.*
56057. *Tulun 458.*

56058 and 56059. Citrus spp. Rutaceæ.

From Swatow, China. Plants presented by Rev. A. H. Page. Received December 21, 1922. Quoted notes by Mr. Page.

"These fruits, among the very best of the citrus fruits of China, grow chiefly in the low delta region crossed by the Tropic of Cancer, where there is a slight frost perhaps once in 10 years, during the period when the trees are dormant."

56058. Citrus nobilis deliciosa (Ten.) Swingle. **Mandarin orange.**

"A tangerine which is as large and fully as sweet as the navel orange."

For previous introduction, see S. P. I. No. 45938.

56059. Citrus sp.

"The 'soft orange,' which, like the tangerine, is easily peeled when thoroughly ripe. It will keep a long time without ice and becomes very sweet. It is only of medium size."

56060 to 56063. Ribes spp. Grossulariaceæ.

From Elstree, Herts, England. Presented by Hon. Vicary Gibbs. Received December 18, 1922.

56060. Ribes henryi Franch.

Plant. An unarmed evergreen shrub, about 3 feet high, native to the vicinity of Szechwan in Hupeh, China. The oval dark-green leaves are

56060 to 56063—Continued.

up to 4 inches in length, and the small oval-oblong berries are crowned by the persistent calyx. This species bears considerable resemblance to *Ribes laurifolium* Jancz. (Adapted from *Bulletin Mensuel de la Société Linnéenne Paris, new series, No. 9, p. 87,* and *Gardeners' Chronicle, 3d ser., vol. 71, p. 213.*)

56061. RIBES LAURIFOLIUM Jancz.

Plant. A very attractive flowering currant first discovered in Szechwan, western China, at an altitude of 7,000 feet, where it grows as an evergreen unarmed shrub up to 6 feet in height; not common. The rich-green oval leaves are coarsely toothed and up to 5 inches in length. The greenish yellow flowers are borne in pendent clusters over 2 inches long, appearing in February and March. (Adapted from *The Garden, vol. 79, p. 171.*)

56062. RIBES LONGERACEMOSUM Franch.

Cuttings. "This species, found in the mountains of western China, bears large black fruits of good flavor, in racemes a foot and a half long." (*E. H. Wilson, Naturalist in Western China, vol. 2, p. 31.*)

For previous introduction, see S. P. I. No. 40459.

56063. RIBES MAXIMOWICZII Batal.

Cuttings. A deciduous shrub 6 to 9 feet high, first found by the Russian traveler Potanin, in Kansu, in 1885, but introduced into England several years later from western China. The leaves, in threes or fives, are 2 to 5 inches wide, glossy green above and pale downy beneath. The flowers, borne in long slender clusters in May, are made conspicuous by the dull lurid-red calyxes. The fruits, which are thickly covered with stiff glandular bristles, are, according to E. H. Wilson, sometimes orange and sometimes red, possibly at different stages of development. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 59, p. 273.*)

For previous introduction, see S. P. I. No. 40410.

56064 to 56066. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Fajardo, Porto Rico. Seeds presented by R. A. Veve, Experiment Station, Fajardo Sugar Co. Received December 28, 1922. Quoted notes by Mr. Veve.

"These three varieties are very good in our district, and their seed germinates very well. Although all three of them are susceptible to mosaic disease, they are more resistant than the native varieties *Cristalina* and *Rayada*, which are here considered as standards."

56064. *D109.*

For previous introduction, see S. P. I. No. 49262.

56065. *D433.*

For previous introduction, see S. P. I. No. 49264.

56066. *F. C. 306.* "This is a local variety, a seedling of D433."

56067. PANGIUM EDULE Reinw. Flacourtiaceæ. Pangi.

From Manila, Philippine Islands. Seeds presented by A. Hernandez, director, Bureau of Agriculture. Received December 13, 1922.

"Seeds of pangi (*Pangium edule*) obtained from the barrio of Panagan, municipality of Lagonoy, Camarines Sur. Pangi seeds yield about 50 per cent of pitjoeng or samaun oil having the following constants (see Bureau of Forestry, Manila, Philippine Islands, Bulletin No. 20, p. 159):

Specific gravity	0.937
Saponification value	178–183
Iodin value	89.94
Titer test of fatty acids	44.4"

—(*Hernandez.*)

"I have just eaten this fruit for the first time; it is quite similar to the *marang* (*Artocarpus odoratissima* Blanco) in flavor, being very sweet and rich. The flesh is rather scant and the seeds large, but some day we may discover a seedless one and then we shall have a real feast. The fruit is so large that one (seedless) would be enough for three to five people." (*P. J. Wester.*)

A Philippine tree which reaches a height of 25 meters (82 feet), with very large, smooth, pointed leaves and yellowish green flowers. The oval brown fruit is over 6 inches long and contains several seeds imbedded in a yellowish, edible pulp. The fresh seeds are poisonous, but steeping in water makes them edible. (Adapted from *Brown, Wild Food Plants of the Philippines, p. 126.*)

56068. Dendrocalamus sikkimensis Gamble. Poaceæ. **Bamboo.**

From Sibpur, near Calcutta, India. Seeds presented by C. C. Calder, curator, Royal Botanic Garden. Received December 11, 1922.

"This bamboo flowered profusely this year in the Darjiling District." (*Calder.*)

For previous introduction and description, see S. P. I. No. 55815.

56069 and 56070.

From Buitenzorg, Java. Seeds presented by Dr. P. J. S. Cramer, Director of the General Experiment Station. Received December 18, 1922.

56069. Citrus medica L. Rutaceæ. **Citron.**

Seeds of a peculiar citron with papayalike fruits from Java.

56070. Garcinia mangostana L. Clusiaceæ. **Mangosteen.**

These seeds are introduced from Java in the hope of establishing the mangosteen in our tropical dependencies.

For previous introduction and description, see S. P. I. No. 55496.

56071. Dioscorea alata L. Dioscoreaceæ. **Greater yam.**

From Fort Pierce, Fla. Tubers presented by C. S. Steele. Received December 28, 1922.

"This yam is a strain selected from the Hawaiian purple-skinned yam, S. P. I. No. 46768. The purple layer, just beneath the outer skin, was very thin and sharply defined in the selected tuber, and the flesh of the tuber was white and of good quality when cooked. Yams of the purple-skinned type vary considerably with respect to the thickness of the purple layer and also in quality, and it is still to be determined whether this selection will remain constant." (*R. A. Young.*)

56072 to 56074. Phaseolus spp. Fabaceæ.

From Santiago de las Vegas, Cuba. Seeds presented by Dr. Mario Calvino, director, Agricultural Experiment Station. Received December 29, 1922. Quoted notes by Doctor Calvino.

56072. Phaseolus calcaratus Roxb. **Rice bean.**

"*Frijol mambi* or *Diablito.* Seeds of this variety were originally sent from Oriente, where the plant grows spontaneously in the thickets. The seeds are small, about the size of a grain of rice, kidney shaped, and dark red. It is a pole bean of rapid growth and is very productive."

56073. Phaseolus lunatus L. **Lima bean.**

"This is a good variety of pole Lima which I imported from Trujillo, Peru."

56074. Phaseolus vulgaris L. **Common bean.**

"*Frijol negro.* One of the cultivated varieties of Cuba."

56075 to 56079.

From Santiago de las Vegas, Cuba. Seeds presented by Dr. Mario Calvino, director, Agricultural Experiment Station. Received December 30, 1922. Quoted notes by Doctor Calvino.

56075 and 56076. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"The following Lima beans are cultivated in Cuba."

56075. Light-red beans. **56076.** Dark-red beans.

56077 to 56079. VIGNA spp. Fabaceæ.

56077. VIGNA CYLINDRICA (Stickm.) Skeels. **Catjang.**

"*Frijol precioso.*'

56078 and 56079. VIGNA SESQUIPEDALIS (L.) Fruwirth. **Yard-Long bean.**

56078. "*Habichuela china negra.*"

56079. "*Habichuela china variegata.*"

56080 to 56117.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 6, 1922. Quoted notes by Mr. Rock.

56080 to 56083. CASTANEA spp. Fagaceæ. **Chestnut.**

56080. CASTANEA sp.

"(No. 6682. September 29, 1922.) A tree 60 to 100 feet tall, with trunk 4 to 5 feet in diameter, and hard, tough dark-brown wood, found at an altitude of 8,200 feet, and very common, four and a half days' journey west of Talifu, beyond a village called Paitoupu and 40 li (12 miles) from Yungping, where it forms dense forests. The leaves are large, broadly ovate, coarsely serrate, glossy above and silvery beneath. The burs are borne in spikes, with thick, green, short spines in spiral ridges, similar to those of *Castanea armata*. The nuts are very small, someth ng like those of the chinquapin, and very sweet and palatable. The natives cut the tree for firewood a foot above the ground; it ratoons very freely, sending forth shoots from the old stump. I have not seen any evidence of disease in any of the trees of this species, although I have examined many trees. The timber is excellent, being used for building purposes."

For an illustration of the trunk of this chestnut, see Plate IV.

56081. CASTANEA sp.

"(No. 6683. September 30, 1922.) A tree 50 to 60 feet high, with a straight trunk 1 to 2½ feet in diameter and ascending branches, found in yellow clay loam in forests 20 li (6 miles) from Paitoupu, four and a half days' journey west of Talifu, at an altitude of 8,200 feet. The dark-green leathery leaves are very handsome, and the numerous burs, larger than those of the following [S. P. I. No. 56082], are borne in lateral spikes. The nuts are very sweet and delicious. These trees are perfectly healthy. Trees of this species are also found on the western slopes of the Tsangshan Range, but their fruits are all attacked by worms."

56082. CASTANEA sp.

"(No. 6683a. September 30, 1922.) A tree of the same size as the preceding [S. P. I. No. 56081] and with leaves similar but a paler green, found in the mountains 20 li (6 miles) from Paitoupu near a hamlet called Shiaoshui. The burs are smaller, with the spines arranged differently, and shorter and sharper. The nuts are the same size."

56080 to 56117—Continued.

56083. CASTANEA sp.

"(No. 6686. September 28, 1922.) This is the same as No. 6682 [S. P. I. No. 56080], but was collected near Taipingpu, three days' journey west of Talifu. The seeds were gathered from young shoots, for the trees had all been cut down."

56084. CATALPA DUCLOUXII Dode. Bignoniaceæ.

"(Nos. 3097, 3217.) A tree 80 feet tall, with a straight trunk 3 to 4 feet in diameter, found in the Likiang Plain at an altitude of 8,800 feet: in large groves also south of Talifu on the Menghau Ting Plain. The pinkish lilac flowers are borne in large full panicles and make the tree very ornamental. It is a very valuable timber tree, and the wood is not attacked by insects. Seeds of this tree are exported from Tengyueh to other parts of Yunnan, Tengyueh being the center of distribution. The Chinese name is *Chun nin shu.*"

For previous introduction, see S. P. I. No. 55931.

56085. CORNUS CAPITATA Wall. Cornaceæ. **Bentham's cornel.**

"(No. 6684. September 29, 1922.) A tree 30 feet or more in height with a trunk a foot or more in diameter, or at times only shrubby, found beyond Paitoupu, two days' journey west of Yangpi, at an altitude of 8,000 feet. The fruits, larger than a large strawberry and of the same shape and color, have sweet yellow flesh and are much relished; they are often sold in the markets."

56086. CORYLUS sp. Betulaceæ. **Filbert.**

"(No. 6635. September 24, 1922.) A shrub 6 to 10 feet high, with large hairy leaves, found among mica bowlders at the foot of the steep hills rising behind Kinngintui, a village not far from Yangpi, at an altitude of 6,000 feet. At this time of the year the weather here is hot. The fruits, of fairly large size, are sweet and of a flavor like that of hazelnuts. This shrub is worthy of cultivation for the nuts."

56087. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Hawthorn.**

"(No. 6685. September 27, 1922.) A tree 30 to 35 feet high, with straight ascending branches, found wild between Yangpi and Taipingpu, four days' journey west of Talifu. The large-seeded yellowish red fruits, the size of crab apples and ridged, are borne in large clusters at the ends of the branches; they are candied by the natives."

For previous introduction, see S. P. I. No. 55988.

56088 to 56090. DIOSPYROS spp. Diospyraceæ **Persimmon.**

56088. DIOSPYROS LOTUS L.

"(No. 6693. September 25, 1922.) A wild persimmon found near watercourses on the hills back of Kinngintui, 20 li (6 miles) east of Yangpi, at an altitude of 6,000 feet. The fruits are the size of a large green olive."

56089. DIOSPYROS LOTUS L.

"(No. 6705. October, 1922.) A spreading tree 50 feet high with a drooping crown, found wild on the Salwin watershed, western slope of the Salwin Valley above Homushu, at an altitude of 7,000 feet. The tree was loaded with the small yellowish green persimmons, less than an inch in diameter."

56090. DIOSPYROS sp.

"(October 3, 1922.) A tree 35 feet high with a large spreading crown, which grows half wild on the hillsides near Shayang, two days' journey east of Yungchang. The edible persimmons, the size of a tennis ball, are orange-yellow and are very sweet and delicious."

56091. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

"(No. 6694. September 27, 1922.) A very large tree with a huge crown, which is very numerous on the hills and slopes near Taipingpu.

56080 to 56117—Continued.

at an altitude of about 8,300 feet. The nuts are very thick shelled and difficult to break and are gathered by the natives for the sake of the oil. There are several varieties which vary in the shape of the nuts, some being oblong, some ovoid, and some globular; all are thick shelled."

56092 to 56099. MALUS spp. Malaceæ. **Apple.**

56092. MALUS sp.

"(No. 6687. September 28, 1922.) A large tree with a large crown of ascending branches, found beyond Taipingpu, three days' journey west of Talifu, at an altitude of 8,200 feet. The yellowish green fruits are 2 inches in diameter, fragrant but sour."

56093. MALUS sp.

"(No. 6688. September 27, 1922.) A wild apple tree from the Yangpi Mountains, two days' journey from Talifu, where it grows at an altitude of 7,800 feet. The fruits are bright red and yellow, with rather numerous seeds."

56094. MALUS sp.

"(No. 6690. September 27, 1922.) A tree 30 feet in height with a trunk 2 to 2½ feet in diameter and straight ascending branches, found wild in red clayey soil all over the ranges between Yangpi and Taipingpu, at an altitude of 8,000 feet. The oblong leaves are dark green above and pale beneath; the very numerous fruits, the size of small apples, are yellowish with a bright reddish tinge, with firm, very fragrant but sour flesh. The tree is exceedingly hardy and free from disease and occurs here where nothing else will grow except the hardy Yunnan pine (*Pinus sinensis*)."

56095. MALUS sp.

"(No. 6691. September, 1922.) A peculiar tree with long spreading, drooping branches like a willow, found only along watercourses between Yangpi and Taipingpu, at an altitude of 8,300 feet. The tree was loaded with small oblong fruits less than an inch long and half an inch in diameter, with dull carmine-red skin and very juicy sour flesh. I did not see this species elsewhere."

56096. MALUS sp.

"(No. 6696. September 30, 1922.) A fine hardy tree 15 to 20 feet high, which grows wild with *Castanea* sp., in the hills between Huanglienpu and Chutung. The yellowish red fruits are 2 inches in diameter."

56097. MALUS sp.

"(No. 6696. September, 1922.) Seeds of the preceding [S. P. I. No. 56096] collected beyond Shiashuichi. The flowers are red."

56098. MALUS sp.

"(No. 6698. October 4, 1922.) A tree 20 feet tall which grows wild in the mountains beyond Pingpo, on top of the western ridge of the Mekong Valley, at an altitude of 8,000 feet. The tree was loaded with thousands of dark-crimson, oblong, mealy fruits the size of wild cherries; in fact, the tree could be mistaken at a short distance for a cherry tree. It is a prolific bearer and grows in clay loam mixed with slate."

56099. MALUS sp.

"(No. 6713. October, 1922.) A wild apple tree 20 to 30 feet high, sent to me through the kindness of Rev. Mr. Fullerton, of the Szemao Mission; it grows in the mountains near Szemao at an altitude of 5,000 feet or more. The globose fruits are little more than an inch in diameter and are called *toi*."

56080 to 56117—Continued.

56100. (Undetermined.)

"(No. 6689. September 27, 1922.) A tree 30 feet in height, found in the forests 20 li (6 miles) from Paitoupu, on steep hillsides with *Gastanea* spp., at an altitude of 8,100 feet. It is exceedingly ornamental, with its shining dark-green leaves and great masses of papery crimson berries; it excels holly in every respect as a decorative plant."

56101 to 56111. PYRUS spp. Malaceæ. **Pear.**

56101. PYRUS sp.

"(No. 6636. September 24, 1922.) A wild pear tree 15 feet high, which grows in well-drained soil among huge bowlders on the steep hillsides back of the temple of Fu Kwe Ssu, back of the village of Kinngintui, 20 li (6 miles) from Yangpi. The fruits, larger than any of the ordinary wild pears collected (except No. 6553 [S. P. I. No. 56003]), are more pear shaped, with yellowish brown skins and very juicy subacid flesh. This species is very hardy and perfectly free from disease. The region where it grows has a hot, dry spring, a rainy summer, a hot, humid autumn, and a cold winter season of two months."

56102. PYRUS sp.

"(No. 6703. October, 1922.) A wild pear tree 25 feet high which grows near Talishao at an altitude of 8,000 feet. The very numerous fruits, the size of crab apples, have yellowish brown skin, yellow flesh, and large seeds."

56103. PYRUS sp.

"(No. 6704. October, 1922.) A wild pear tree 30 feet high found growing with the preceding [S. P. I. No. 56102] near Talishao. The tree was loaded with the globular russet-brown fruits, an inch in diameter, with very juicy, sour flesh."

56104. PYRUS sp.

"(No. 6711. September, 1922.) A tree 20 to 25 feet high, with spreading whiplike branches, found wild in the mountains between Hochiang and Pingpo, above the Hsiakuan River. The tree was loaded with small oval russet fruits, half an inch in diameter, with sour yellow flesh."

56105 to 56110. Seeds of domesticated varieties.

56105. PYRUS sp.

"(Yungchang, October 5, 1922.)"

56106. PYRUS sp.

"(Yungchang, October 5, 1922.)"

56107. PYRUS sp.

"(October 16, 1922.)"

56108. PYRUS sp.

"(October 5, 1922.)"

56109. PYRUS sp.

"(Yangpi. September 26, 1922.)"

56110. PYRUS sp.

"(Yungchang. October 5, 1922.)"

56111. PYRUS sp.

"(October, 1922.) A tree 30 feet high, with ascending whiplike branches, found wild in the valley between Shiashuichi and Chutung, at an altitude of 6,500 feet. The tree was loaded with the small, ovoid, russet-yellow, very juicy fruits and was very ornamental."

56112. QUERCUS sp. Fagaceæ. **Oak.**

"(No. 6712. September, 1922.) A shrubby oak 10 feet high, which forms dense bushes on the hills beyond Hsiakuan, one day's trip west of Talifu, at an altitude of 6,800 feet. The tree is a heavy bearer, but the acorns are not palatable."

56080 to 56117—Continued.

56113. ROSA ROXBURGHII Tratt. Rosaceæ. **Rose.**

"(No. 6583. September 23, 1922.) A low shrubby rose 2 to 4 feet high, distributed from Talifu to the Hsiakuan Plain, at an altitude of 6,800 feet. It is a very attractive rose, with its large, handsome bright-red buds and large, bright magenta-red flowers. The compressed fig-shaped fruits are an inch in diameter."

56114. RUBUS sp. Rosaceæ.

"(No. 6706. October, 1922.) A spineless shrub 8 feet high, with ascending branches, found at an altitude of 8,000 feet on the top of the range separating the Salwin and Shweli watersheds. The leaves, palmately divided into three to five separate leaflets, are prominently ribbed and silvery beneath, and the solitary small fruits are yellowish red and watery. The shrub is very ornamental."

56115. THEA sp. Theaceæ.

"(No. 6697. October 2, 1922.) A tree 40 to 50 feet tall, with a trunk over a foot in diameter, found growing in the temple grounds of Yung Kwe Ssu, between Yungping and Shayang, at an altitude of 8,000 feet. The flowers are said to be white and 4 inches across and the fruits as large as a man's fist."

56116. VIBURNUM sp. Caprifoliaceæ.

"(No. 6699. October 4, 1922.) A beautiful shrub 5 to 8 feet in height, of spreading habit, found on the ridges beyond the valley of the Mekong, between Pingpo and Pangchiao, at an altitude of 8,000 feet, in a forest composed of *Pinus armandi* and *Thea* sp. The shrub was covered with clusters of small crimson berries which were almost transparent. They are somewhat acid and may be used for making jellies."

56117. DICHOTOMANTHES TRISTANIAECARPA Kurz. Amygdalaceæ.

"(No. 6702. October, 1922.) A spreading shrub 15 feet high, found west of Hoachiao at an altitude of 7,000 feet. It is very ornamental, with large clusters of berries which are red with a yellowish tinge."

56118 to 56127.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 12, 1922. Quoted notes by Mr. Rock.

56118. CASTANEA sp. Fagaceæ. **Chestnut.**

"(Kancha. October 15, 1922.) A wild chestnut occurring in the mountains one day's trip north of Tengyueh."

56119. CASTANEA sp. Fagaceæ. **Chestnut.**

"(No. 6683. September, 1922.) Collected at Paitoupu, about 200 feet lower down than the seeds sent previously under the same number [S. P. I. No. 56081], which see for description."

56120. GAULTHERIA sp. Ericaceæ.

"(No. 6709. October 9, 1922.) A highly ornamental shrub, 10 to 15 feet tall, with long whiplike drooping branches reaching to the ground, found on the summit of the Salwin Divide at an altitude of 8,000 feet. The leaves are leathery and dark green, and the large white flowers are borne in great masses all along the branches. The fruits are dark purplish black."

56121. PRUNUS sp. Amygdalaceæ. **Plum.**

"(No. 6700. October, 1922.) A tree 20 feet in height, with a spreading crown, which grows wild along brooks in the mountains between Shiaoshuichi and Chutung, at an altitude of 6,000 feet. The small globose, yellow, clingstone plums are little more than an inch in diameter, with firm, rather sour flesh."

56118 to 56127—Continued.

56122 to 56125. PYRUS spp. Malaceæ. **Pear.**

56122. PYRUS sp.

"(No. 6701. October, 1922.) A tree 25 feet high, found in clay soil on the mountains between Hoachiao and the temple of Yung Kwe Ssu, Shayang village, at an altitude of 6,000 to 7,000 feet. The fruits of this tree are larger than those previously found north of Talifu. The natives use this tree as a stock plant."

56123. PYRUS sp.

"(No. 6708. September, 1922.) A very hardy tree 25 to 30 feet high, growing in hard clay soil in the mountains near Yangpi at an altitude of 7,000 feet. The russet-yellow fruits are the size of small marbles."

56124. PYRUS sp.

"(Kiangpienkai. October, 1922.)"

Seeds of a domesticated variety.

56125. PYRUS sp.

"(October, 1922.) A wild pear tree 25 feet in height, closely related to the other wild pears of this region, found beyond Yangpi at an altitude of 8,000 feet. The russet fruits are about half an inch in diameter."

56126. ROSA sp. Rosaceæ. **Rose.**

"(No. 6692. September 27, 1922.) A large rambling or climbing shrub with long stout branches, which grows in the pine forest back of Yangpi, two days' journey west of Talifu, at an altitude of 6,000 feet. The flowers are said to be large and whitish cream colored and the fruits deep red to orange."

56127. ZIZIPHUS sp. Rhamnaceæ.

"(No. 6695. September 27, 1922.) A very hardy tree 20 feet high, with a large, spreading crown, found growing wild in yellow clay soil on the hills back of Yangpi, in company with *Pinus sinensis*, at an altitude of 6,500 feet. The fruits, the size of small olives, are borne in large numbers; they are green with a slight reddish tinge, inedible, with almost no flesh, being mostly skin and stone. The seeds are large, angular, and brown."

56128 to 56141.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 19, 1922. Quoted notes by Mr. Rock.

56128 and 56129. CASTANEA spp. Fagaceæ. **Chestnut.**

56128. CASTANEA sp.

"(No. 6714. October 21, 1922.) A large tree 70 to 80 feet tall, found in white sandy micaceous soil on slopes in the mountains 30 li (9 miles) north of Manchi, at an altitude of 6,500 feet. The lanceolate leaves, entire or nearly so, are fawn colored beneath. The burs resemble those of *Castanea armata*, but are smaller; the black, shining nuts are quite small. The trees of this species appeared to be free from all disease."

56129. CASTANEA sp.

"(No. 6715. October 20, 1922.) A large tree, closely resembling *Castanea armata* except in foliage, found on tops of ridges before descending to the Manchi Valley and above Menglien, one and a half days' journey southeast of Tengyueh. The burs and nuts are as large as those of *C. armata*."

56128 to 56141—Continued.

56130. CASTANOPSIS HYSTRIX A. DC.

"(No. 6716. October, 1922.) Collected in the vicinity of Teng yueh."

56131. CHAENOMELES sp. Malaceæ. **Chinese quince.**

"(November 1, 1922.) A wild quince collected on the Puerhfu Plain, near Puerhfu, and sent to me by Miss Clara Petersen, a missionary of Puerhfu."

56132. DIOSPYROS sp. Diospyraceæ. **Persimmon.**

"(No. 2872. Puerhfu. November 1, 1922.) A large tree 60 feet in height, with a huge spreading crown. According to Miss Clara Petersen, who sent me the seeds, the fruits are small and very sweet. This is also a fine shade tree."

56133. DIOSPYROS sp. Diospyraceæ. **Persimmon.**

"(No. 6717. October 23, 1922.) A wild persimmon tree 20 to 25 feet high, which grows in dense forests between Menglieh and Manchi, at an altitude of 6,000 feet. The very numerous oblong yellow fruits are the size of crab apples and sweet."

56134. DIOSPYROS sp. Diospyraceæ. **Persimmon.**

"(No. 6719. October, 1922.) A tree 35 feet high, with few ascending branches, found on the summit ridge on the road from Hsiangta to Manchi, four days' journey southeast of Tengyueh, at an altitude of 7,000 feet. The oblong, velvety, rich-yellow fruits are large for a wild species, being 2 inches in diameter, and the very sweet flesh incloses large seeds."

56135. MALUS sp. Malaceæ. **Apple.**

"(No. 6721. October 30, 1922.) A much-branched tree 35 to 40 feet high, collected in the mountains of the Schweli Basin near Lungling, at an altitude of 6,700 feet. The foliage grows down to the ground, and the lanceolate leaves are dark green above and silvery white beneath. The somewhat ovoid greenish yellow fruits are 2½ inches in diameter, with very fragrant but very sour, firm flesh."

56136. MALUS sp. Malaceæ. **Apple.**

"(November 1, 1922.) A small, sour, hard apple found wild in the mountains a half day's journey from Puerhfu, at an altitude of about 6,000 feet. These seeds were sent to me by Miss Clara Petersen, missionary, of Puerhfu."

56137 to 56141. PYRUS spp. Malaceæ. **Pear.**

56137. PYRUS sp.

"(November 1, 1922.) A wild pear from the mountains near Puerhfu, where it grows at an altitude of about 6,000 feet. The fruits are globose, brown, and spotted, and of very sweet flavor."

56138. PYRUS sp.

"(November 1, 1922.) Collected half a day's journey from Puerhfu, in the mountains. The fruit is large, several inches in diameter, juicy, and contains only one or two seeds."

56139 to 56141. "The following wild pears were collected in the mountains near Puerhfu and sent by Miss Clara Petersen, November 1, 1922."

56139. PYRUS sp.

56140. PYRUS sp.

"A small brown juicy pear."

56141. PYRUS sp.

"A small round pear with brown skin and juicy flesh. The tree is large."

56142 to 56144. Pyrus spp. Malaceæ. Pear.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 27, 1922. Quotd notes by Mr. Rock.

56142. Pyrus sp.

"(No. 6718. October, 1922.) A wild pear tree 25 to 30 feet in height, with long drooping and ascending central branches, found beyond Menglieh, a day and a half south of Tengyueh. The leaves are oval, broadly heart-shaped, and the globose, yellowish red, spotted fruits, an inch or less in diameter, are closely related to *Pyrus pashia* of southern Yunnan."

56143. Pyrus sp.

"(No. 6720. October, 1922.) A wild pear tree 35 feet high, spreading in habit, with stout trunks and blackish brown bark, found in sandy soil at the summit ridge leading to Mengshi, four days from Tengyueh, at an altitude of 7,000 feet. The leaves, bronze colored to red, are oblong, acuminate at the apex and acute at the base, and the very numerous spherical, yellowish red, spotted fruits are an inch in diameter."

56144. Pyrus sp.

"(No. 6721. November 4, 1922.) A small wild pear tree 15 to 20 feet high, with rambling branches, found with No. 6718 [S. P. I. No. 56142] on the hills beyond Menglieh, at an altitude of 6,000 feet, growing in coarse quartz sand. The leaves are small and dark green, and the fruits, the size of small marbles, are dark yellowish red and spotted."

INDEX OF COMMON AND SCIENTIFIC NAMES

Actinidia chinensis, 55840.
Alcurites sp., 55926.
Amaranthus sp., 55972.
Amygdalus persica, 55831, 55835, 55836, 55885–55888, 55915–55919, 55927–55929.
Anneslia brevipes, 55964.
Apple. See *Malus* spp.
Arachis hypogaea, 55977.
Ash, *Fraxinus micrantha*, 55993.

Bactris utilis. See *Guilielma utilis*.
Bamboo, *Dendrocalamus sikkimensis*, 55815, 56068.
Phyllostachys aurea, 55975.
Bean, common, *Phaseolus vulgaris*, 56074.
Lima, *P. lunatus*, 56073, 56075, 56076.
rice, *P. calcaratus*, 56072.
Yard-Long, *Vigna sesquipedalis*, 56078, 56079.
Bertholletia nobilis, 55914.
Boldo, *Peumus boldus*, 55871.
Brazil nut, *Bertholletia nobilis*, 55914.

Calliandra brevipes. See *Anneslia brevipes*.
Castanea mollissima, 55930.
sativa, 55827.
spp., 55983, 55984, 56080–56083, 56118, 56119, 56128, 56129.
Castanopsis hystrix, 56130.
Castor-bean, *Ricinus communis*, 56027.
Catalpa duclouxii, 55931, 56084.
Catjang, *Vigna cylindrica*, 56077.
Chaenomeles spp., 55985, 56131.
Cherry, *Prunus* spp., 55822, 55823, 55940.
Chestnut. See *Castanea* spp.
Chrysophyllum magalismontana, 56031.
Citron, *Citrus medica*, 56069.
Citrullus vulgaris, 55906.
Citrus decumana. See *C. grandis*.
grandis, 55925.
medica, 56069.
nobilis deliciosa, 55832, 56058.
sp., 56059.
Clover, red, *Trifolium pratense*, 55838.
Colocasia esculenta, 55986.
Corchorus olitorius, 55973.
Corn, *Zea mays*, 55976.
Cornel, Bentham's, *Cornus capitata*, 56085.
Cornus capitata, 56085.
officinalis, 56024.
sp., 55955.
Corylus spp., 55987, 56086.
Cotoneaster hebephylla, 55873.
pannosa, 55896.
spp., 55820, 55821.
Crataegus pinnatifida, 55932, 55988, 56087.
Cucumber, *Cucumis sativus*, 55828, 56030.
Cucumis melo, 55922.
sativus, 55828, 56030.
Cucurbita moschata, 56025.

Dasheen, *Colocasia esculenta*, 55986.
Davidia involucrata, 55911.
involucrata vilmoriniana, 55912, **55913.**
Davidsonia pruriens, 56028.
Dendrocalamus sikkimensis, 55815, 56068.
Dichotomanthes tristaniaecarpa, 56117.
Dioscorea alata, 56071.
pentaphylla, 55924.
sp., 55834.
Diospyros lotus, 56088, 56089.
spp., 56090, 56132–56134.

Escallonia philippiana, 56021.
Eugenia brasiliensis. See *E. dombeyi*.
dombeyi, 55978.

Filbert, *Corylus* sp., 56086.
Fire thorn, *Pyracantha* spp., 55996, 55997.
Fragaria chiloensis, 56023.
Fraxinus micrantha, 55993.
Fundi, *Syntherisma exilis*, 55974.

Garcinia mangostana, 56070.
oblongifolia, 55894.
Gaultheria sp., 56120.
Grape, *Vitis* sp., 55953.
Grumichama, *Eugenia dombeyi*, 55978.
Guilielma utilis, 55982, 56020.

Hawthorn, *Crataegus pinnatifida*, 55932, 55988, 56087.
Hazelnut, *Corylus* sp., 55987.
Hemerocallis forrestii, 55933.
Honeysuckle, *Lonicera* spp., 55897, 55956.

Incarvillea grandiflora brevipes, 55934.

Jaboticaba, *Myrciaria* spp., 55979, 55981.
Jaboticatuba, *Myrciaria* sp., 55980.
Juglans regia, 55989, 56091.

Leycesteria glaucophylla, 55907.
Lilium tigrinum, 55935.
Lily, tiger, *Lilium tigrinum*, 55935.
Lonicera xerocalyx, 55956.
sp., 55897.
Lycopersicon esculentum, 55841.

Malus spp., 55817, 55889, 55990, 56092–56099, 56135, 56136.
Mangifera indica, 55839.
Mango, Wootten, *Mangifera indica*, 55839.
Mangosteen, *Garcinia mangostana*, 56070.
Meconopsis integrifolia, 55957, 55991.
Meliosma cuneifolia, 55936.
Muskmelon, *Cucumis melo*, 55922.
Myrciaria spp., 55979–55981.

Oak, *Quercus* sp., 56112.
Olea europaea, 55814.
Olive, Arbéquina, *Olea europaea*, 55814.
Orange, mandarin, *Citrus nobilis deliciosa*, 55832, 56058.
Oryza sativa, 56026.
Osbeckia crinita, 55908.
Osteomeles schwerinae, 55992.

Paeonia delavayi, 55898, 55937, 55994.
Peony. See *Paeonia delavayi*.
Pangi. See *Pangium edule*.
Pangium edule, 56067.
Papyrius sp., 55938.
Pea, field, *Pisum arvense*, 55874–55877.
garden, *Pisum sativum*, 55878–55880.
Peach, *Amygdalus persica*, 55831, 55835, 55836, 55885–55888, 55915–55919, 55927–55929.
Blanquillo de Mayo, 55915.
De Vino, 55916.
Goodman's Choice, 55831.
Monstruoso amarillo de Viña del Mar, 55917.
O'Higgins, 55918.
Pavía blanco, 55919.
Peanut, *Arachis hypogaea*, 55977.
Pear. See *Pyrus* spp.
Pejibaye, *Guilielma utilis*, 55982, 56020.
Persimmon. See *Diospyros* spp.
Peumus boldus, 55871.
Phaseolus calcaratus, 56072.
lunatus, 56073, 56075, 56076.
vulgaris, 56074.
Phleum pratense, 55837, 56029.
Phyllostachys aurea, 55975.
Pieris formosa, 55909.
Pisum arvense, 55874–55877.
sativum, 55878–55880.
Plocama pendula, 55920.
Plum, *Prunus ursina*, 55872.
Prunus spp., 55818, 55819, 55824, 55901, 55941, 56121.
Polygala arillata, 55939.
Pomegranate, *Punica granatum*, 55923.
Posoqueria latifolia, 55921.
Primrose. See *Primula* spp.
Primula bulleyana, 55995.
chrysopa, 56019.
sinopurpurea, 55899.
vinciflora, 55900.
Prunus persica. See *Amygdalus persica*.
ursina, 55872.
spp., 55818, 55819, 55822–55824, 55901, 55940, 55941, 56121.
Pummelo, *Citrus grandis*, 55925.
Punica granatum, 55923.
Pyracantha spp., 55996, 55997.
Pyrus calleryana dimorphophylla, 55965.
ussuriensis, 55966–55970.
hondoensis, 55971.
spp., 55998–56016, 56101–56111, 56122–56125, 56137–56144.

Quercus sp., 56112.
Quince, Chinese, *Chaenomeles* spp., 55985, 56131.

Raspberry, *Rubus* spp., 55891–55893, 55903.
Ribes glaciale, 55902.
henryi, 56060.
laurifolium, 56061.
longeracemosum, 56062.
maximowiczii, 56063.
sp., 55890.
Rice, *Oryza sativa*, 56026.
Ricinus communis, 56027.
Rosa roxburghii, 56113.
spp., 55905, 55942–55946, 55958–55963, 56017, 56126.
Rose. See *Rosa* spp.
Rubus biflorus, 55825.
fraxinifolius, 55833.
spp., 55826, 55891–55893, 55903, 55904, 56114.
Rye, *Secale cereale*, 55881.

Saccharum officinarum, 55829, 55830, 56064–56066.
Scarlet plume, *Warszewiczia coccinea*, 56022.
Scilla sp., 55947.
Secale cereale, 55881.
Squash, *Cucurbita moschata*, 56025.
Stenocalyx brasiliensis. See *Eugenia dombeyi*.
Strawberry, Chilean, *Fragaria chiloensis*, 56023.
Styrax langkongensis, 56018.
Sugar cane. See *Saccharum officinarum*.
Symplocos glomerata, 55910.
Syntherisma exilis, 55974.

Thea sp., 56115.
Timothy, *Phleum pratense*, 55837, 56029.
Tomato, *Lycopersicon esculentum*, 55841.
Trifolium pratense, 55838.

Triticum aestivum, 55842–55870, 55882–55884, 56032–56057.
vulgare. See *T. aestivum*.

Undetermined, 55954, 56100.
Uvaria calamistrata, 55895.

Vaccinium delavayi, 55948.
sp. 55949.
Viburnum spp., 55950–55952, 56116.
Vigna cylindrica, 56077
sesquipedalis, 56078, 56079.
Vitis sp., 55953.
Voandzeia subterranea, 55816.

Walnut, *Juglans regia*, 55989, 56091.
Warszewiczia coccinea, 56022.
Watermelon, *Citrullus vulgaris*, 55906.
Wheat, common, *Triticum aestivum:*
Aussie, 55842.
Baldknob, 55843.
Boureong, 55869.
Bunge, 55870.
Canberra, 55856.
Carrabin, 55861.
Cuballing, 55862.
Dindiloa, 55863.
Early Bird, 55844.
Forelock, 55845.
Gallipoli, 55857.
Gerralying, 55864.
Gresley, 55858.
Ghurka, 55846.
Wheat, common, *Triticum aestivum*—Continued.
Improved Steinwedel, 55859.
Merredin, 55865.
Minister, 55860.
Nabawa, 55866.
Nangeenan, 55867.
Narrogin, 55868.
Riverina, 55847.
Selection 13 (C1) from Hard Federation, 55848.
19 (C1) from Hard Federation, 55849.
69 (A6) from Hard Federation, 55850.
Stamina, 55851.
Tulun, 56032–56057.
Vavilov's No. 96, 55882.
No. 648, 55883.
No. 1569, 55884.
Wagga No. 49, 55852.
No. 54, 55853.
Wandilla, 55854.
Waratah, 55855.

Yam, *Dioscorea* sp., 55834.
Dioscorea pentaphylla, 55924.
greater, *Dioscorea alata*, 56071.
Yang-tao, *Actinidia chinensis*, 55840.

Zea mays, 55976.
Ziziphus sp., 56127.

UNITED STATES DEPARTMENT OF AGRICULTURE

INVENTORY No. 74

Washington, D. C. ▼ Issued June, 1925

SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION, BUREAU OF PLANT INDUSTRY, DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1923 (S. P. I. NOS. 56145 TO 56790)

CONTENTS

	Page
Introductory statement	1
Inventory	5
Index of common and scientific names	39

INTRODUCTORY STATEMENT

THIS INVENTORY contains a record of some unusually rare plants which have been collected by Agricultural Explorer Joseph F. Rock, whose travels in the western part of the Province of Yunnan, China, have been carried on regardless of the unsettled conditions in that region. He has been obliged not only to take the usual risks of travel at high altitudes on primitive mountain passes where a misstep might mean instant death, run the usual dangers from infectious diseases, like pneumonic plague and dysentery, and bear the severe nervous strain of loneliness, but he also has had to keep out of the way of the roving bands of Tibetans and the Chinese soldiers carrying on an almost continuous conflict along the Tibetan border of Yunnan.

Collecting dried specimens or taking photographs of plants under such conditions requires great skill, an unusual knowledge of oriental languages, and a wide acquaintance with Asiatic plants. When, however, to the collecting of specimens and the taking of photographs is added the gathering and packing of living seeds and plants and getting them alive to America, requiring more than two months by letter post, the nature of the problem which Mr. Rock has had to solve is more correctly stated. Much of the material gathered on the Likiang Snow Range has had to come by special messenger as letter post over mountain passes at 12,000 feet altitude and be plunged into the torrid humidity of the Rangoon post office, to remain in that steaming atmosphere until the post bags were finally unloaded in the dry Italian air of Brindisi. To pack cuttings and seeds of high-mountain plants for such a voyage and have them arrive alive in Washington is a tribute to the attention to detail which Mr. Rock has shown, and it is to be hoped that his efforts will be repaid by the large number of species which have survived the ordeal and will thrive in this country.

By one of those fatalities of things, the trees which were most desired from Yunnan, Yunnan chestnuts and species of the related genus Castanopsis, are known to have very short-lived seeds which are particularly hard to transport. Although almost every conceivable method of packing was tried, nearly all the seeds of these genera perished on the way. It is believed, however, that enough lived to establish some of the species in America.

Mr. Rock's material described in this inventory came mainly from the general region of Likiang, which lies more than 8,000 feet above sea level, near the great mountain range around which the Yangtze River meanders on its way to the Pacific, a region of deep gorges and snow-capped mountain peaks.

18609—25†——1

The oriental persimmon has come into prominence as a promising fruit crop for the South, but as yet horticulturists are not satisfied with the American persimmon, *Diospyros virginiana*, or the Chinese, *D. lotus*, as a stock. Mr. Rock made a collection of undescribed species of Diospyros (Nos. 56308 to 56310) which may prove of particular value for this purpose. A tall, spreading species, 50 feet in height, from Tengyueh; another from an altitude of 8,500 feet on the slopes back of Likiang; and a species with black fruit the diameter of a half dollar are three forms which, added to those previously collected by him, should provide us with the stock that is needed.

The wild apple of Yunnan (*Malus yunnanensis*, Nos. 56320, 56321, and 56324), which Mr. Rock found among the limestone bowlders along the watercourses of the Likiang Snow Range at 10,000 feet altitude, is 30 to 40 feet in height, has fruits an inch in diameter borne in large clusters, and, according to Mr. Rock, is one of the handsomest trees in this region. The value of this species in this country for breeding or stock purposes time alone will determine. Mr. Rock's two other species from the same region, as yet unidentified (*Malus* spp., Nos. 56322 and 56323), or his wild species from the dense forests of the Salwin Ridge (No. 56325), or that from the Tengyueh-Sadon Trail (No. 56459), or those from the hills back of Mengka (No. 56460), or the two from Puerhfu (Nos. 56474 and 56475), may, any one of them, prove of more value.

Of wild pears (*Pyrus* spp.) Mr. Rock found some remarkable forms in Yunnan: One (No. 56277) bearing mellow edible fruits 3 to 4 inches in diameter, from 6,000 feet altitude; a second one (No. 56278) growing to be 70 feet tall, with fruits 2½ inches in diameter; a third (No. 56279), from 6,500 feet, which is 30 feet tall and has greenish brown fruits the size of bullets, and a fourth (No. 56280), from 7,000 feet altitude, which grows to be 60 feet in height and has fruits 2½ inches in diameter.

On the Hoching Range, near Likiang, Mr. Rock collected seeds of one of the rare genera of Chinese conifers (*Keteleeria* sp., No. 56316). Since only two species of this conifer appear to be known, and as the one which Robert Fortune discovered in China has grown well in Italy, this species of Rock's may thrive in California and Florida.

Two wild olives (*Olea* spp., Nos. 56328 and 56329) which make trees 50 feet in height, from the forests beyond Wolung and the Shweli Valley, should be added to the California collections of olives and their relatives, for some time, perhaps, a plant breeder may find it possible to cross them and get forms for uses now unknown.

Pinus armandi (No. 56333), one of the tallest of the oriental pines, attaining a height of 90 feet, belongs unfortunately to the 5-leaved pines, which appear to be subject to the white-pine blister rust and may be of doubtful value for forestry purposes. But Rock's wild cherry (*Prunus* sp., No. 56335) from the Likiang Snow Range, his remarkable collection of 10 wild pears (*Pyrus* spp., Nos. 56338 to 56347) and 1 (*Pyrus* sp., No. 56491) from Puerhfu, which has already been used as a stock for pears in Yunnan, his 7 species of oak (*Quercus* spp., Nos. 56348 to 56354), his 10 species of Rhododendrons (Nos. 56355 to 56364), his *Rubus lutescens* (No. 56369), his 4 species of Sorbus (Nos. 56373 to 56376), and 7 as yet unclassified viburnums (Nos. 56379 to 56385) will surely interest amateurs and park superintendents in those regions where they will grow.

Corylus colurna has been a pronounced success in the Arnold Arboretum and the Rochester parks, and another tree filbert (*Corylus* sp., No. 56490) that Mr. Rock discovered at 10,000 feet altitude in the Likiang Snow Range, growing 50 feet high and from 2 to 3 feet in diameter and producing good-sized edible nuts, can scarcely fail to be a real addition to our parks and may even prove a profitable nut-producing tree.

Whether the giant lily (*Lilium* sp., No. 56778) that Mr. Rock found west of Tengyueh, which grows 15 feet high, will be easier of culture than *Lilium giganteum* remains to be determined, but already the lily breeders of the country are interested in it.

In Great Britain, the Chinese shrub *Photinia serrulata* is considered by Bean as "undoubtedly one of the finest evergreens ever introduced," and Rock's Yunnan species (*Photinia* sp., No. 56779), which he remarks is "one mass of deep orange-red fruits in November," may prove slightly different from this species and better adapted to American conditions.

In addition to the material collected by Mr. Rock, the following new introductions are worthy of special mention:

Aesculus wilsonii (No. 56390), a narrow-leaved species of horsechestnut from central China, has been tried in the State of Washington and found better suited to the windy conditions there than the European species.

Acer sterculiaceum (No. 56399), a rare species of maple growing 80 feet high in the Himalayas at an altitude of 9,000 feet, has been sent by G. H. Cave, of Darjiling, India, as has also the handsome Himalayan birch (*Betula utilis*, No. 56400), which is still a rare tree in Great Britain.

C. A. Reed, nut expert of the Department of Agriculture, during his mission to China to study the walnut industry secured among other things a collection of walnuts (*Juglans regia*, Nos. 56409 to 56425) from the northern limit of the culture of this species in China which ought to prove decidedly valuable for American growers of this nut.

Cudrania javanensis (No. 56787), a thorny shrub which was introduced in 1915 from Taiwan and has grown unusually well on the rocky soils of southern Florida, is again introduced from New South Wales. Its value as a fruiting shrub or, as suggested, for hedge purposes deserves to be studied. It is related to the Chinese species, *Cudrania tricuspidata*, and to the Osage orange, *Toxylon pomiferum*, and as crosses between the two genera have been successfully made plant breeders may do something worth while with them.

Hydnocarpus alpina (No. 56445), a relative of one of the chaulmoogra-oil-producing trees of Burma, *H. wightiana*, and *H. anthelminthica*, from the Nilghiri Hills of southern India, were sent in by Edmond Versin, of St. Jean le Blanc, France.

Four rare species of maple (*Acer* spp., Nos. 56453 to 56456), from Darjiling, which may thrive in the State of Washington and add their beauty to the parks there, have come from G. H. Cave.

Through Dr. H. L. Shantz seeds have come from Capt. Charles M. F. Swynnerton, of Kilossa, Tanganyika Territory, East Africa, of the Johnston clover, *Trifolium johnstoni* (No. 56458). In the high altitudes of East Africa this is one of the prominent forage plants.

Dr. Carl Hartley sent in on request seeds of the large edible chestnut of western Java, *Castanopsis argentea* (No. 56461), which, because of its excellent quality, is worthy of the consideration of tropical horticulturists. The possibilities of a tropical chestnut for the northern markets, we believe, have not yet been considered.

In 1911 Sir Percy Fitzpatrick, of Johannesburg, Transvaal, sent the seeds of *Asparagus africanus*, with his opinion that it is better in flavor than any of the cultivated varieties. In view of the possibility of this species being adapted to certain conditions in America for which our ordinary varieties of *A. officinalis* are not suitable, we are glad to get an additional lot of seeds (No. 56483) through Mr. Gossweiler, of Loanda, Angola.

In 1919 Mr. Gossweiler sent seeds of a remarkable vegetable, *Rumex abyssinicus*, which made an unusual growth in American gardens, often attaining 7 feet in height, and because of its entire freedom from fiber and its delicate texture it has recommended itself for general use in the Southern States as a new source of summer "greens," a class of vegetable much desired by residents there. Mr. Gossweiler has sent another lot of seed (No. 56486) for further experimentation.

Tecoma garrocha (No. 56535), a native of Argentina, may supplant with its slender raceme of bright-yellow and scarlet flowers the well-known *T. stans* so commonly grown in Florida. Doctor Proschowsky has sent seeds from Nice, France.

From Hobart, Tasmania, the Secretary of Agriculture has sent a collection of seeds which includes three handsome acacias (*Acacia* spp., Nos. 56559 to 56561), a species of Casuarina new to Florida (*C. suberosa*, No. 56564), the Wallaby grass (*Danthonia semiannularis*, No. 56566), a perennial tufted fodder grass (*Stipa pubescens*, No. 56569), and *Eucalyptus regnans* (No. 56567), the tallest of the genus, even reaching, according to earlier records, 400 feet in height; in other words, one of the tallest trees of which there is any record.

Twelve selected varieties of sugarcane (*Saccharum officinarum*, Nos. 56617 to 56628) representing a long series of selections and plant-breeding experiments to produce plants resistant to the mosaic disease have been received from Robert M. Grey. Field tests will show whether these are highly resistant under other conditions than those about Cienfuegos, Cuba, where Mr. Grey carried on his breeding experiments.

A collection of mango varieties (*Mangifera indica*, Nos. 56648 to 56659) from Rio de Janeiro, presented by Dr. P. H. Rolfs, of Vicosa, Minas Geraes, although inferior in size and color to the East Indian mangos, may be valuable for southern Florida, where the anthracnose is so prevalent, on account of their resistance to that disease.

Aleurites montana (No. 56676), the mu-oil tree of southern China, bears nuts hat yield the southern tung oil of commerce, which appears to be indistinguish-

able from the northern tung oil obtained from *A. fordii*. In view of the increasing use for this oil southern Florida may become a domestic source of supply through the growth of the southern species.

Vicary Gibbs has given us his Aldenham flowering apple (*Malus sylvestris*, No. 56693), said to be a chance hybrid originating at Aldenham and one of the very finest of all the red-flowered apples, for our parks and dooryards. He has sent also seeds of *Stranvaesia davidiana* (Nos. 56695 and 56696), a handsome bush or small standard tree which is evergreen and hardy at Washington and because of its bright foliage worthy of a place in any small garden.

After many years of fruitless effort there have been collected at last, through the kindness of C. T. White, Government botanist of Queensland, the seeds of the two unusually hardy species of Garcinia, *G. mestoni* (No. 56699) and *G. gibbsiae* (No. 56698), both native to the forests of the Bellenden Ker Hills of Queensland at altitudes of 2,000 feet. Since these may grow better in southern Florida than the more tropical species of garcinias, they have a special interest for those interested in the establishment of the mangosteen in the Western Hemisphere. *Garcinia mestoni* has a large, very juicy fruit of a pleasant acid flavor, but ripe fruits of *G. gibbsiae* have not yet been eaten by any collector who could describe its character. Although the seeds sent by Mr. White failed to live, he is now growing plants in Brisbane for shipment to America.

Thirty-six seedling sweet-potato varieties (*Ipomoea batatas*, Nos. 56710 to 56745) from plantings of the Big Wig, Key West "yam," and Black Rock varieties which it is believed were crossed naturally, for trial in the sweet-potato regions of this country, were sent by J. B. Thompson, of St. Croix, Virgin Islands.

Consul Charles E. Allen, of Damascus, sent a collection of apple varieties (*Malus sylvestris*, Nos. 56746 to 56755) from the Plain of Zebdani, which lies northwest of Damascus and is 3,500 feet above the sea. It is possible that some of these may prove better adapted to the Mohave Desert apple region of California than are the Jonathan, Rome Beauty, Yellow Newtown, and other varieties now being tried there.

The botanical determinations of introductions have been made and the nomenclature determined by H. C. Skeels, and the descriptive matter has been prepared by Paul Russell, who has had general supervision of this inventory.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., July 25, 1924.

INVENTORY[1]

56145. Rubus sp. Rosaceæ. Raspberry.

From Stavanger, Norway. Plants presented by Thoralf Bryne. Received March 1, 1923.

"*Paradise berry*. A large red raspberry, almost as large as the largest variety known in cultivation, which is the English variety 'The Royal.'" (*Bryne.*)

56146 and 56147.

From Brisbane, Queensland. Seeds presented by C. T. White, Government botanist. Received January 4, 1923.

56146. Davidsonia pruriens F. Muell. Cunoniaceæ.

A small (30 to 40 feet) tree of graceful erect habit with long drooping pinnate leaves and pendulous clusters of reddish flowers. The oval fruit about the size of a goose egg is covered with short stiff hairs. Rubbing with a rough cloth quickly and easily removes these and exposes the smooth, plumlike, purple skin. The soft fleshy pulp is rich purple and has a sharply acid flavor; it contains a few flat, irregularly shaped seeds which are small for the size of the fruit, a feature not frequently occurring in wild fruits. This "plum," as it is called, is largely used by settlers in Queensland for making jam and jelly. The hard dark-brown, close-grained wood is tough and durable and is used for tool handles and mallets. This tree is a native of tropical Queensland; a smaller form is found in southern Queensland and adjoining parts of New South Wales.

For previous introduction, see S. P. I. No. 54785.

56147. Eucalyptus staigeriana F. Muell. Myrtaceæ. **Lemon-scented ironbark.**

"This is a valuable oil-yielding species which so far has not been exploited because the trees grow in rather isolated places in North Queensland." (*White.*)

A tree of medium size with oval or narrow blue-green leaves covered with numerous oil dots. The foliage of this tree yields a large quantity of oil, equal in fragrance to that of lemons, for which it is an agreeable substitute. The proportion of oil obtained from dry leaves is 2¾ per cent; the specific gravity of the oil is 0.901. (Adapted from *Bailey, Synopsis of the Queensland Flora, p. 176.*)

56148. Pappea capensis Eckl. and Zeyh. Sapindaceæ.

From Pretoria, Transvaal, Union of South Africa. Seeds presented by I. B. Pole Evans, Chief, Division of Botany. Received January 5, 1923.

A shrub or small tree which occurs abundantly in the vicinity of the Fish River, Cape Province, South Africa. The wood is white, close-grained, and hard and is used for farm implements and furniture. The leathery, hard fruit, about half an inch in diameter, usually contains one reddish brown seed with a brittle shell; within is a soft kernel which is yellow and very oily. The kernel constitutes about 65 per cent of the entire seed. The entire seeds contain 47.8 per cent of oil, which is golden yellow and fairly viscous. The oil is of the "nondrying" type and probably could be used either for soap manufacture or as a lubricant. The residual meal left after extracting the oil has a fairly good nutritive value, but also a small quantity of a saponin, and feeding trials would be necessary to determine whether the meal could be used as cattle feed. (Adapted from *Bulletin of the Imperial Institute, London, vol. 17, p. 488.*)

56149. Lilium sp. Liliaceæ. Lily.

From Burma. Seeds collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received January 5, 1923.

"(No. 6732. Kachin Hills. November 13, 1922.) A tall lily 10 feet high, with a stem 2 inches in diameter, collected along a brook in a rhododendron thicket on the Mengka-Sadon Trail, in northern Burma, on the Changtifang Mountains at an altitude of 9,400 feet. The leaves are broadly triangular, and although the plant was seen only in the fruiting stage, it is probable that the flowers are large. In the region where this species grows it is now extremely cold, ice forming on the brooks at about 4 p. m." (*Rock.*)

56150 to 56152.

From China and India. Seeds collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received January 5, 1923. Quoted notes by Mr. Rock.

56150. Malus sp. Malaceæ. **Apple.**

"(No. 6725. Hpunkaw, Burma. November 11, 1922.) A tree 60 to 70 feet tall, with a trunk 3½ feet in diameter, found in sandy soil in dense forests on the ridge above the Kachin village of Hpunkaw. The branches are apt to have long spinelike branchlets near the trunk, but these do not occur on the older branches. The fruits, about 2 inches in diameter, are somewhat oval, with firm aromatic flesh."

56151 and 56152. Pyrus spp. Malaceæ. **Pear.**

56151. Pyrus sp.

"(No. 6730. Mengka, Yunnan. November 12, 1922.) A tree 30 feet high, with long spreading branches, found wild in sandy loam on a small plain at an altitude of 5,400 feet. The large oblong leaves are acute at both ends, and the very numerous, spherical-compressed, russet-brown fruits are an inch in diameter. Where this species grows it is very cold; ice forms now every day in the late afternoon."

[1] It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

56150 to 56152—Continued.

56152. PYRUS sp.

"(No. 6731. Mengka, Yunnan. November 12, 1922.) A wild pear which grows in company with the preceding, No. 6730 [S. P. I. No. 56151], but has smaller leaves and fruits; the latter are oblong pear shaped, reddish yellow, and very numerous."

56153 to 56157. FRAGARIA spp. Rosaceæ. Strawberry.

From Bourg la Reine, Seine, France. Plants presented by Millet & Fils. Received January 5, 1923. Quoted notes from catalogue of Millet & Fils.

Secured for department horticulturists experimenting with small fruits.

56153. FRAGARIA sp.

"*Belle Lyonnaise.* Plant thickset, vigorous; fruit round, very fragrant, with white flesh."

56154. FRAGARIA sp.

"*Docteur Morère.* Fruit very large and sweet; one of the best varieties; forces well."

56155. FRAGARIA sp.

"*Madame Meslé.* A very vigorous giant variety with enormous brilliant vermilion red fruits with pink flesh; a good commercial variety of large yield. Season medium."

56156. FRAGARIA sp.

"*St. Fiacre.* This is the best variety obtained thus far; the plant is very vigorous, with dark-green foliage, and the fruits very large, of a brilliant red and extra quality. The yield is large the first season, and the variety is excellent for forcing and quantity production."

56157. FRAGARIA sp.

"*Marguerite Lebreton.* A very early variety, with abundant elongated fruits. One of the best forcing varieties."

56158. GUILIELMA UTILIS Oerst. Phœnicaceæ. (*Bactris utilis* Benth.) Pejibaye.

From San Jose, Costa Rica. Seeds purchased from Otón Jimenez. Received January 16, 1923.

A shipment of seeds of the pejibaye. For an extended account of this interesting food palm, see the Journal of Heredity, vol. 12, pp. 154–166, April, 1921.

For previous introduction, see S. P. I. No. 54776.

56159 to 56175. FRAGARIA spp. Rosaceæ. Strawberry.

From Maidstone, England. Plants purchased from George Bunyard & Co. Received January 6, 1923. Quoted notes from Bunyard's Catalogue of Fruit Trees.

These varieties, not in the American trade, have been secured for department specialists engaged in strawberry breeding.

56159. FRAGARIA sp.

"*Bedford Champion.* Plant robust, with fine foliage; fruit large, with refreshing acid flavor. Season medium."

56160. FRAGARIA sp.

"*Black Prince.* Fruit small, dark red with scarlet flesh, one of the best for preserving, as the flesh turns a deep red and has a delicious flavor. This is the earliest ripening strawberry here."

56159 to 56175—Continued.

56161. FRAGARIA sp.

"*Countess.* Fruit handsome, wedge shaped, dark crimson, and of first-rate flavor. A moderate cropper. Season late."

56162. FRAGARIA sp.

"*Hibberd's George the Fifth.* Fruits large, some cockscomb shaped, very bright shining scarlet, with carmine, very firm flesh and a flavor equal to the best. This should not be confounded with *Laxton's George the Fifth.* Season late."

56163. FRAGARIA sp.

"*Laxton's Tidbit.* Fruit firm, brilliant scarlet, with white flesh of an exquisite flavor. Central fruits are ovate wedge shaped. Season medium."

56164. FRAGARIA sp.

"*Little Scarlet.* Fruit small, firm, light red, very freely produced, recommended especially for jam. Season early."

56165. FRAGARIA sp.

"*Madame Kooi.* Fruit enormous, hollow, poor flavor, white flesh, crop large. Of Dutch origin. Season medium."

56166. FRAGARIA sp.

"*President.* Fruit handsome, of pale color, with rich pine flavor; fine for forcing, as it retains its flavor and bears well. One of the best all-round sorts as regards quality and productiveness for main crop. Season medium."

56167. FRAGARIA sp.

"*Royal Hautbois.* A fine form of alpine strawberry, of rich aromatic flavor; good free habit."

56168. FRAGARIA sp.

"*St. Fiacre.* The berries, as large as Royal Sovereign, are freely produced and are of a bright color and rich flavor. Bears well in the summer without spoiling the autumn crop which ripens in September and October. A prolific bearer."

56169. FRAGARIA sp.

"*Sir Douglas Haig.* Fine flavor, brilliant color, early, and of large size. Season early."

56170. FRAGARIA sp.

"*The Bedford.* Constant and free bearer; fruit round, of fine appearance, first-rate sweet flavor; foliage ample. Season medium."

56171. FRAGARIA sp.

"*The Earl.* This may be best described as a much improved *Viscomtesse de Thury*, larger in size, more vigorous, and free cropping. Season late."

56172. FRAGARIA sp.

"*The Queen.* An improved *British Queen.* Season medium."

56173. FRAGARIA sp.

"*Twentieth Century.* Large bright-red fruits, produced in enormous quantity; constitution very vigorous."

56174. FRAGARIA sp.

"*Utility of Laxton.* Good color, size, and flavor; the finest late strawberry yet produced."

56175. FRAGARIA sp.

"*Waterloo.* Plant heat resistant, runners few; fruit large, remarkable for its black mulberrylike appearance. Season late."

56176. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Grapefruit.**

From Bangkok, Siam. Seeds presented by Dr. Y. S. Sanitwongse, through Maurice P. Dunlap, American consul. Received January 9, 1923.

"*Thong Dee* or '*Golden*' *pummelo*. Fruit neither globose nor pear shaped, but somewhat flattened with one side of pistil end somewhat cheeked; size large, measuring 6 inches wide and only 4⅜ inches high; rind averaging half an inch thick, slightly colored pink in pithy part, especially near the flesh; flesh colored like that of *Daang Ai Chaa*, except that it is rather of a light brown than deep red and the color appears only in streaks in a flesh which is in reality quite white; seeds many; pulp vesicles large and easily separating from membrane, very juicy; flavor good but not so delicious as *Kao Pan;* general shipping qualities not so favorably reported as many other varieties; tree vigorous and reported to produce fruits of attractive flavor and juiciness under somewhat adverse conditions." (*G. Weidman Groff.*)

56177 and 56178. AMYGDALUS COMMUNIS L. Amygdalaceæ. **Almond.** (*Prunus amygdalus* Stokes.)

From Serai, Bagdad, Mesopotamia. Seeds presented by G. S. Cameron, officiating director of agriculture. Received January 8, 1923. Quoted notes by Mr. Cameron.

Seeds of two native almond varieties of Mesopotamia.

56177. "Sweet almonds with a thin, soft shell."

56178. "Sweet almonds with a hard, thick shell."

56179. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Milan, Italy. Seeds purchased from Fratelli Ingegnoli. Received January 24, 1923.

Seeds of a giant red clover introduced for cultural and comparison tests.

56180. GUILIELMA UTILIS Oerst. Phœnicaceæ. (*Bactris utilis* Benth.) **Pejibaye.**

From Limon, Costa Rica. Seeds presented by G. P. Chittenden, manager, United Fruit Co. Received January 16, 1923.

For previous introduction, see S. P. I. No. 56158.

56181 and 56182. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received January 31, 1923.

Locally grown red-clover seeds introduced for cultural and comparison tests.

56181. *Surchoix Extra.* Grown northwest of Paris.

56182. *Violet de Bretagne.* Grown in Brittany.

56183 to 56191.

From Brisbane, Queensland. Seeds presented by E. W. Bick, curator, Botanic Garden. Received January 22, 1923.

56183 and 56184. ACACIA spp. Mimosaceæ.

56183. ACACIA FASCICULIFERA F. Muell.

A tall acacia from southwest Queensland, where it sometimes reaches a height of 70 feet. The phyllodia or "leaflike stems" are leathery, very narrow, with

56183 to 56191—Continued.

callous tips, and from 4 to 6 inches long. The flower heads, each containing 20 to 30 flowers, are borne in small axillary clusters. The very hard red wood is close grained and commonly used for building.

56184. ACACIA JUNCIFOLIA Benth.

A large slender-branched shrub, native to Queensland, with rushlike phyllodia 6 inches long or more and tipped with erect or curved points. The small fuzzy globular flower heads are borne singly or in pairs.

56185. BRACHYCHITON DISCOLOR F. Muell. Sterculiaceæ. (*Sterculia discolor* F. Muell.)

A large tree native to southern Australia, with roundish heart-shaped leaves, 4 to 6 inches in diameter, with white-velvety lower surfaces. The rose-red flowers, up to 2 inches long, are borne in few-flowered clusters in the upper axils. The wood is soft, light colored, and of rather coarse grain; when dried, however, it hardens and makes good shingles.

56186. CASSIA BREWSTERI TOMENTELLA F. Muell. Cæsalpiniaceæ.

An erect slender tree 20 to 30 feet high, found in thickets about Obum Obum, Queensland, where it is known as "bean tree." The branches, under surface of the leaflets, and small yellow flowers are covered with fine white hairs. The cylindrical pods, 1 or 2 feet long, are bright reddish brown. (Adapted from *Bailey, Queensland Flora, pt. 2, p. 456.*)

For previous introduction, see S. P. I. No. 37137.

56187 and 56188. ERYTHRINA spp. Fabaceæ.

56187. ERYTHRINA TOMENTOSA R. Br.

A small tree 10 to 15 feet high, with thick, rough, prickly bark, native to South Africa. The trifoliolate long-stemmed leaves, 10 to 14 inches long and wide, are densely hairy on both surfaces, and the bright-crimson flowers are borne in many-flowered spikelike clusters. The woody pods, velvety on the surface, are alternately swollen and contracted, which gives them a bizarre appearance. (Adapted from *J. Medley Wood, Natal Plants, vol. 4, pls. 384, 385.*)

56188. ERYTHRINA VESPERTILIO Benth. **Coral tree.**

Usually a small tree with prickly branches, broadly 3-lobed leaves, and numerous erect showy racemes of red flowers. The soft straw-colored wood is very light and spongy and is used by the natives for making shields. The roots are eaten raw.

56189. EUCALYPTUS RARIFLORA F. M. Bailey. Myrtaceæ.

A tall eucalypt from Queensland, where it appears to be rather rare. The slender branchlets are of a pleasing red, and the very variable leaves are almost circular on young trees, becoming very narrow on the older wood. The slender panicles contain usually only a few scattered flowers. (Adapted from *Queensland Agricultural Journal, new series, vol. 1, p. 62.*)

56190. EVODIA ACCEDENS Blume. Rutaceæ.

An erect tree 70 to 80 feet in height, native to damp scrubby places throughout Queensland. The light-colored bark is somewhat corky, and the papery trifoliolate leaves are up to 5 inches long. The small pink flowers, which turn bluish as they die away, are borne in dense lateral clusters. The wood is very white, light, and soft.

56183 to 56191—Continued.

56191. FLINDERSIA OXLEYANA F. Muell. Meliaceæ.

A tall, much-branched tree, often becoming 100 feet in height, with opposite compound leaves which are crowded under the loose, many-flowered panicles. The bright-yellow, strong and fibrous wood is used in cabinet work; it is not readily attacked by white ants. (Adapted from *Bailey, Queensland Flora, pt. 1, p. 239.*)

56192. RAPHANUS SATIVUS L. Brassicaceæ. **Radish.**

From Algiers, Algeria, North Africa. Seeds presented by Dr. L. Trabut, Government botanist. Received January 5, 1923.

"Variety *campestris*. An improved giant radish, with large roots, used as cattle feed. The seeds are sown at the beginning of the rainy season, from August to October." (*Trabut.*)

56193 to 56195. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. **Ma-yuen.**

From Buitenzorg, Java. Seeds presented by H. de Veer, chief of the plant-breeding station for annual crops, Java Department of Agriculture. Received January 8, 1923. Quoted notes by Mr. de Veer.

The *ma-yuen* is an edible soft-hulled variety of Job's-tears (*Coix lacryma-jobi*) quite different from the ordinary form, with hard beadlike seeds. It is grown in India, China, the East Indies, and also in the Philippines, where it is known as "adlay." For an account of the uses of adlay as a cereal and for analytical data, see The Philippine Agricultural Review, vol. 14, pp. 159–177.

56193. "*Djali ketan.* A glutinous form."

56194. "*Witte djali bras.* A form with white seeds."

56195. "*Zwarte djali bras.* A form with black seeds."

For illustrations of the ma-yuen, see Plates I and II.

56196 and 56197. NAGEIA spp. Taxaceæ.

From Hogsback, via Lovedale, Cape Province, South Africa. Seeds presented by David A. Hunter. Received January 8, 1923.

"These trees grow slowly but finally become very large. The timber is fine grained and is largely used in our shops for furniture." (*Hunter.*)

56196. NAGEIA ELONGATA (Ait.) Kuntze. (*Podocarpus elongata* L'Herit.)

This is known in South Africa as the "common yellow-wood," and it is the largest, most plentiful, and one of the most useful trees of Cape Province. The narrow evergreen leaves are quite short, being little more than an inch long. The tree becomes 80 to 120 feet in height, with a trunk usually 3 to 4 feet in diameter, occasionally 10 feet. The wood is light, soft, moderately strong and elastic, and of a pale yellow brown. When exposed to the weather the wood is quite durable.

56197. NAGEIA THUNBERGII (Hook.) F. Muell. (*Podocarpus thunbergii* Hook.)

A fine evergreen timber tree, up to 100 feet tall and with a trunk 4 feet in diameter, which occurs throughout all the timber forests from the Cape of Good Hope to Natal. The quality of the wood of this species is very similar to that of the preceding [S. P. I. No. 56196], and for most purposes they are used indiscriminately.

56198. CYRTANTHUS CONTRACTUS N. E. Brown. Amaryllidaceæ.

From Pretoria, Transvaal, Union of South Africa. Bulbs presented by I. B. Pole Evans, Chief, Division of Botany, Department of Agriculture. Received January 10, 1923.

A handsome member of the amaryllis family from the Transvaal, where its conspicuous beauty as it flowers on the burnt-over fields has earned it the name of "fire lily." The narrow bluish green leaves are over a foot in length, and the Van Dyke red peduncle, 7 inches or over long, bears a pendulous cluster of faintly scented scarlet or carmine flowers with strawberry-red pedicels. (Adapted from *Flowering Plants of South Africa, vol. 1, pl. 4.*)

56199 to 56265. TRITICUM spp. Poaceæ.

From Lisbon, Portugal. Seeds presented by Prof. D. A. Tavares da Silva, Instituto Superior de Agronomia. Received January 10, 1923. Quoted notes by Professor Tavares da Silva.

A collection of the wheat varieties of Portugal, obtained from the Instituto Superior de Agronomia, Lisbon. Secured for department cerealists.

56199 to 56231. TRITICUM AESTIVUM L. (*T. vulgare* Vill.) **Common wheat.**

56199 and 56200. "Hard white-bearded wheat."

56199. "No. 5. *Barbella.*"

56200. "No. 11. *Rieti.*"

56201 to 56208. "Soft wheat."

56201. "No. 30. *Barbella.*"

56202. "No. 31. *Beirão.*"

56203. "No. 33. *Galêgo barbado.*"

56204. "No. 34. *Portuguez.*"

56205. "No. 35. *Precoce italiano.*"

56206. "No. 36. *Ribeiro.*"

56207. "No. 37. *Rieti.*"

56208. "No. 38. *Temporão de Coruche.*"

56209 to 56217. "Beardless wheat."

56209. "No. 42. *Aurora.*"

56210. "No. 43. *Galêgo rapado.*"

56211. "No. 44. *Gentil rosso.*"

56212. "No. 45. *Manitoba.*"

56213. "No. 46. *Môcho de espiga quadrada.*"

56214. "No. 48. *Galêgo rapado* × *Vermeljoilo.*"

56215. "No. 49. *Fucense* × *Môcho de espiga branca.*"

56216. "No. 50. *Rieti* × *Galêgo rapado.*"

56217. "No. 51. *Rieti* × *Môcho de espiga branca.*"

56218 to 56231. "Bearded wheat."

56218. "No. 52. *Amarello de barba branca* × *Ribeiro.*"

56219. "No. 53. *Amarello de barba preta* × *Ribeiro.*"

56220. "No. 54. *Amarello de barba preta* × *Ribeiro* (*Sado*)."

56221. "No. 55. *Anafil* × *Galego barbado* (*Belém*)."

56222. "No. 56. *Barbella* × *Santa Martha.*"

MA-YUEN, AN EDIBLE SOFT-HULLED VARIETY OF JOB'S-TEARS. (COIX LACRYMA-JOBI MA-YUEN (ROM.) STAPF.; S. P. I. NOS. 56193 TO 56195)

Although an edible soft-hulled form of Job's tears appears to have been known since ancient times in India and also for a considerable time in other parts of Asia, it was not until recent years that horticulturists in the Philippines began to see the possibilities of adlay, as this cereal is known there. Under equal conditions it is more productive than rice, the average yield being about 35 bushels per acre, a yield which could probably be increased 10 or 15 per cent by systematic breeding. Wherever rice can be grown adlay will grow, and where the growing wet season is followed by a dry period adlay is more productive than rice. Furthermore, it should be possible to cultivate and harvest adlay with machinery like that used for wheat. (Photographed at the Lamao Experiment Station, Lamao, Philippine Islands)

ONE OF THE BEST PHILIPPINE FORMS OF MA-YUEN. (COIX LACRYMA-JOBI MA-YUEN (ROM.) STAPF.; S. P. I. NOS. 56193 TO 56195)

According to P. J. Wester, of the Philippine Bureau of Agriculture, there are at present in the Philippines seven distinct forms of adlay. These vary greatly in size, shape, color, and hardness of the dried grains, the most desirable forms having small grains with very thin hulls. It is claimed for adlay that it is more easily hulled than rice; it is more nutritious and at least as palatable as rice and can be prepared and eaten in the same manner; it can be ground and mixed with wheat flour to make bread of good quality; it is excellent as chicken feed; and, finally, when cracked it makes a delicious breakfast food. As a supplementary crop to rice and corn it appears to have a promising future in the Philippines and elsewhere in the Tropics, and as a substitute for wheat it deserves very careful consideration. (Photographed at the Lamao Experiment Station, Lamao, Philippine Islands)

56199 to 56265—Continued.

56223. "No. 57. *Galêgo barbado* × *Fucense*."

56224. "No. 58. *Galêgo barbado* × *Lobeiro* (*Ideal*)."

56225. "No. 59. *Lobeiro* × *Barbella*."

56226. "No. 61. *Lobeiro* × *Galêgo barbado*."

56227. "No. 62. *Lobeiro* × *Ribeiro*."

56228. "No. 63. *Santa Martha* × *Barbella*."

56229. "No. 64. *Santa Martha* × *Fucense*."

56230. "No. 65. *Santa Martha* × *Ribeiro*."

56231. "No. 66. *Amarello barba de branca* × *Ribeiro* × *Ribatejano*."

56232. TRITICUM AESTIVUM × DURUM. **Hybrid wheat.**

"No. 47. *Anafil* × *Môcho de espiga branca*. Beardless wheat."

56233. TRITICUM AESTIVUM × POLONICUM. **Hybrid wheat.**

"No. 67. *Rieti* × *Galêgo barbado* × *Gigantil*. Bearded wheat."

56234. TRITICUM DICOCCUM Schrank. **Emmer.**

"No. 1. *Spelta*. Hard wheat."

56235 to 56259. TRITICUM DURUM Desf. **Durum wheat.**

56235 to 56241. "Hard white-bearded wheat."

56235. "No. 4. *Amarello de barba branca*."

56236. "No. 6. *Branco*."

56237. "No. 7. *Candial*."

56238. "No. 9. *Da Terra*."

56239. "No. 10. *Lobeiro*."

56240. "No. 12. *Santa Martha*."

56241. "No. 14. *Vermeljoilo*."

56242 to 56255. "Hard black-bearded wheat."

56242. "No. 16. *Amarello de barba preta*."

56243. "No. 17. *Anafil*."

56244. "No. 18. *Aza de Côrvo*."

56245. "No. 19. *Cascalvo*."

56246. "No. 20. *Javardo*."

56247. "No. 21. *Marquez*."

56248. "No. 22. *Monjil*."

56249. "No. 23. *Mourisco*."

56250. "No. 24. *Pombinho*."

56251. "No. 25. *Rapinegro*."

56252. "No. 26. *Rubião*."

56253. "No. 27. *Vermelho fino*."

56254. "No. 28. *Durazio rijo*."

56255. "No. 29. *Durazio mollar*."

56256 to 56259. "Soft wheat."

56256. "No. 39. *Tremez preto*."

56257. "No. 40. *Tremez rijo*."

56258. "No. 41. *Tremez molle*."

56199 to 56265—Continued.

56259. "No. 60. *Lobeiro* × *Branco*. Bearded wheat."

56260. TRITICUM DURUM × TURGIDUM.

"No. 8. *Canôco*. Hard white-bearded wheat."

56261. TRITICUM POLONICUM L. **Polish wheat.**

"No. 2. *Gigantil*. Hard wheat."

56262 to 56265. TRITICUM TURGIDUM L. **Poulard wheat.**

56262. "No. 3. *Milagre, ou Sete-espigas*. Hard wheat."

56263. "No. 13. *Sicilio*. Hard white-bearded wheat."

56264. "No. 15. *Alexandre*. Hard black-bearded wheat."

56265. "No. 32. *Egypcio*. Soft wheat."

56266 to 56271. ORYZA SATIVA L. Poaceæ. **Rice.**

From Manila, Philippine Islands. Seeds presented by Adn. Hernandez, director, Bureau of Agriculture. Received January 15, 1923. Quoted notes by Mr. Hernandez.

Secured for department rice specialists.

"Seeds of six more or less scented or flavored varieties of rice. The material was raised by this bureau at its Alabang Rice Station, Alabang, Rizal. These rices are white, nonglutinous, and non-bearded. Averages on maturity and yield were taken from results of previous years. The corresponding data for this year (1922) are not yet available."

56266. "(No. 13.) *Macan piña*. Tested 13 years under lowland conditions; matures usually in 139 days. Average yield 2,539 kilograms per hectare (approximately 2,260 pounds per acre)."

56267. "(No. 15.) *Mangasa III*. Tested 3 years under lowland conditions; matures usually in 137 days. Average yield 1,245 kilograms per hectare (approximately 1,110 pounds per acre)."

56268. "(No. 27.) *Antique*. Tested 7 years under lowland conditions; matures usually in 149 days. Average yield 2,889 kilograms per hectare (approximately 2,500 pounds per acre)."

56269. "(No. 31.) *Bong Dua*. Tested 3 years under lowland conditions; matures usually in 164 days. Average yield 1,660 kilograms per hectare (approximately 1,470 pounds per acre)."

56270. "(No. 163.) *Sipot*. Tested 14 years under lowland conditions; matures usually in 137 days. Average yield 2,486 kilograms per hectare (approximately 2,200 pounds per acre)."

56271. "(No. 164.) *Guinalong*. Tested 12 years under lowland conditions; matures usually in 140 days. Average yield 2,340 kilograms per hectare (approximately 2,080 pounds per acre)."

56272. TRIFOLIUM SQUARROSUM L. Fabaceæ. **Clover.**

From Florence, Italy. Seeds presented by Prof. A. Fiori, Reale Instituto Superiore Forestate de Firenze. Received January 16, 1923.

Introduced for cultural and comparison tests with American clovers.

An upright or ascending, robust annual with branches up to 30 inches in length, native to the

Mediterranean countries. The pink or white flower heads are oval when young, becoming more elongated later.

56273 and 56274. RUBUS spp. Rosaceæ. **Raspberry.**

From Los Banos, Philippine Islands. Seeds presented by Prof. J. E. Higgins, Los Banos College of Agriculture. Received January 16, 1923.

Philippine species of Rubus introduced for breeding experiments with our cultivated blackberries and raspberries.

56273. RUBUS FRAXINIFOLIUS Poir.

A scrambling shrub, with branches 2 to 4 meters (6½ to 13 feet) long, which is very common in the mountains from Luzon to Mindanao, Philippine Islands. The stems and leaves are armed with sharp spines, and the white flowers are about 2 centimeters (nearly an inch) across. The bright-red berries 10 to 15 millimeters (about half an inch) in diameter, borne in clusters, are fairly juicy and edible but rather tasteless. (Adapted from *Brown, Wild Food Plants of the Philippines, p. 63.*)

56274. RUBUS ROSAEFOLIUS J. E. Smith.

A spiny shrub rarely over 3 feet high, common in the mountains of Luzon, the Bisaya Islands, and Mindanao, Philippine Islands. The red fruits borne singly or in clusters are about 1.5 centimeters (half an inch) in diameter; they are juicy but rather insipid. (Adapted from *Brown, Wild Food Plants of the Philippines, p. 66.*)

56275 to 56281.

From China. Seeds collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received January 15, 1923. Quoted notes by Mr. Rock.

56275. MALUS sp. Malaceæ. **Apple.**

"(No. 7003. November, 1922.) A tree 30 to 40 feet high occurring wild along watercourses in the Kuyung Mountains north of Tengyueh at an altitude of 7,000 feet. Probably a good stock plant."

56276. PHOTINIA sp. Malaceæ.

"(No. 7002. November, 1922.) A rosaceous tree 30 to 40 feet tall, with a dense crown, collected in the Kuyung Mountains at an altitude of 6,000 feet. The narrow pale-green leaves are toothed, and the flowers, said to be white, are borne in large panicles about 5 inches across. The fruits are deep orange red."

56277 to 56280. PYRUS spp. Malaceæ. **Pear.**

56277. PYRUS sp.

"(November, 1922.) A wild pear found in the mountains near Puerhfu at an altitude of 6,000 feet. The large mellow edible fruits are 3 to 4 inches in diameter."

56278. PYRUS sp.

"(No. 6735. November 20, 1922.) A large hardy tree 60 to 70 feet tall, which grows in the mountains beyond Taho, north of Tengyueh, at an altitude of 7,000 feet. The leaves are large, oblong, and acuminate, and the numerous reddish brown, somewhat acrid fruits are 2½ inches in diameter."

56279. PYRUS sp.

"(No. 6736. November 21, 1922.) A tree 30 feet high with a spreading crown, found at an altitude of 6,500 feet in a valley in an oak forest along a brook beyond Chiehnmachin, a day's journey north of Tengyueh. This species has small oval leaves and globose, greenish brown fruits the size of bullets."

56275 to 56281—Continued.

56280. PYRUS sp.

"(No. 7001. November, 1922.) A large tree 60 feet tall with a huge ascending crown, found in sandy soil in an oak forest in the Kuyung Mountains north of Tengyueh at an altitude of 7,000 feet. The leaves are large, oblong-lanceolate, with a reddish tinge. The numerous globose, greenish brown fruits are 2½ inches in diameter."

56281. ROSA sp. Rosaceæ. **Rose.**

"(No. 6738. November, 1922.) A large climbing rose growing wild on the slopes of the mountains near Mengka, four days' journey west of Tengyueh, at an altitude of 6,000 feet, in a region where frost and ice are common in December. The white flowers are in large terminal corymbs, and the fruits are oval and reddish."

56282. POLYALTHIA LONGIFOLIA (Sonner.) Benth. and Hook. Annonaceæ.

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, in charge, department of botany and forestry, experiment station of the Hawaiian Sugar-Planters' Association. Received January 15, 1923.

A large, handsome, erect evergreen tree which is wild in the drier parts of Ceylon and southeastern India and, because of its ornamental appearance and suitability as a shade tree, is commonly planted in avenues along roads in Bengal and South India. The ovoid purple fruits ripen during the rainy season, June to October; these are not eaten except in times of scarcity. The wood is white or whitish yellow, light and very flexible, and used for making matches, pencils, boxes, etc. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, p. 313.*)

For previous introduction, see S. P. I. No. 53923.

56283. LESPEDEZA STRIATA (Thunb.) Hook. and Arn. Fabaceæ. **Japanese clover.**

From Kobe, Japan. Seeds presented by E. R. Dickover, American consul in charge. Received January 19, 1923.

Introduced for the use of department specialists engaged in breeding forage plants.

56284. PANICUM MAXIMUM Jacq. Poaceæ. **Guinea grass.**

From Marti, Camaguey, Cuba. Seeds purchased from Jose Sanchez Moran. Received January 24, 1923.

Introduced for the use of specialists engaged in forage-crop investigations.

A perennial erect bunch grass 4 to 6 feet tall, with broad, flat leaves and open spreading panicles of spikelets. It is a native of Africa introduced into tropical America, where it is cultivated for forage, furnishing pasture and green feed.

56285 to 56287. TRIFOLIUM spp. Fabaceæ.

From Aarhus, Denmark. Seeds presented by Fr. Dreyer, Aarhus, through S. Sörensen, agricultural adviser to the Danish Government, Washington, D. C. Received February 6, 1923. Quoted notes by Mr. Sörensen.

56285. TRIFOLIUM PRATENSE L. **Red clover.**

"*Hersnap.* This represents our best strain of red clover, and in several tests at the Danish State Experiment Station this gave about 20 per cent more hay than the usual commercial varieties."

For previous introduction, see S. P. I. No. 44107.

56285 to 56287—Continued.

56286 and 56287. TRIFOLIUM REPENS L. White clover.

"The white clovers represent two of our best strains, one developed on the island of Fyn and the other on the mainland of Jutland. Both of these are very popular in Denmark."

56286. *Morso.* 56287. *Stryno.*

56288 to 56386.

From China. Seeds collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received February 2, 1923. Quoted notes by Mr. Rock.

56288 to 56291. ACER spp. Aceraceæ. **Maple.**

56288. ACER DAVIDI Franch.

"(No. 6799. October, 1922.) A very attractive maple 50 to 60 feet in height, found on the Likiang Snow Range at an altitude of 10,000 feet. It has large oval heart-shaped, coarsely toothed leaves and long pendent clusters of samaras."

56289. ACER sp.

"(October, 1922.) A tall, stately tree 50 to 80 feet high, with a straight trunk, found among limestone bowlders back of Ngulukeu on the Likiang Snow Range at an altitude of 9,600 feet. The rather small leaves are 5-lobed, and the samaras are in erect spikes."

56290. ACER sp.

"(No. 6806. October, 1922.) A tall tree 70 to 80 feet high, with a dense round crown, from the western slopes of the Likiang Snow Range on the Ashi Road at an altitude of 11,000 feet. The leaves are large and 3-lobed, and the samaras are borne in stout drooping clusters."

56291. ACER sp.

"(No. 6834.) A handsome evergreen maple 70 to 80 feet in height, with a huge crown, found at an altitude of 8,000 feet in the forest between Hpunkaw and Mengka, one and a half days' travel from the Burmese Kachin Hills. The trunk is more than 3 feet in diameter, and the branches descend almost to the ground."

56292. BENZOIN sp. Lauraceæ. (*Lindera* sp.)

"(Nos. 6723 and 7010. November, 1922.) A tree 35 feet high, with a spreading crown, common around Tengyueh and along the Taping River. The trunk is sometimes a foot or more in diameter, usually smaller; the leathery aromatic leaves are dark green and glossy. From the scarlet 1-seeded fruits, borne in short clusters, is obtained a white oily liquid used to make a yellow wax. This wax is used for burning, for keeping leather soft, and for other household purposes."

56293. BERBERIS DICTYOPHYLLA Franch. Berberidaceæ. **Barberry.**

"(No. 6804. October, 1922.) A spiny shrub 6 to 8 feet high, found on alpine meadows of the Likiang Snow Range at an altitude of 12,000 feet. It is very ornamental, with yellow flowers and red fruits."

For previous introduction, see S. P. I. No. 55718.

56294. BUDDLEIA FORRESTII Diels. Loganiaceæ.

"(No. 6816. October, 1922.) A very attractive shrub found only in limestone soil on the Likiang Snow Range at an altitude of 10,000 feet. It has white woolly leaves and spikes of lavender-blue flowers."

56288 to 56386—Continued.

56295. BUXUS sp. Buxaceæ. **Box.**

"(No. 6793. October, 1922.) A very handsome shrub about 5 feet high, which grows among limestone bowlders on the Likiang Snow Range at an altitude of 11,000 feet. The small elliptical leaves are bright green."

56296 to 56300. CASTANOPSIS spp. Fagaceæ. **Chestnut.**

56296. CASTANOPSIS sp.

"(No. 6751. October, 1922.) A tall tree 70 to 80 feet in height, found on the slopes of the Likiang Snow Range at an altitude of 10,000 feet. The thick leathery leaves are silvery beneath, and the small edible nuts are sweet."

56297. CASTANOPSIS DELAVAYI Franch.

"(No. 6768. November 30, 1922.) One of the finest and largest species of Castanopsis in Yunnan; it reaches 80 feet in height, with trunks 2 to 3 feet in diameter, and is found on the summit ridge of the Shweli-Salwin Divide at an altitude of 8,000 feet. It is a fine timber tree, free from disease. The small brown nuts are edible and sweet."

56298. CASTANOPSIS sp.

"(No. 6819. November 30, 1922.) A tree 50 to 80 feet high, with a trunk 4 feet in diameter, found on the Salwin Ridge at an altitude of 8,000 feet. The dark-green elliptic leaves are brown beneath, and the small black nuts are edible and sweet."

56299. CASTANOPSIS sp.

"(No. 7006. Kuyung. November, 1922.) A tree 40 to 50 feet in height, with a trunk 1 to 2 feet in diameter, which grows in the mountains north of Tengyueh at altitudes of 7,000 to 8,000 feet. The broad oval leaves are pointed, with the upper half toothed, and the spines on the burs are arranged in concentric rings. The small nuts are edible and sweet."

56300. CASTANOPSIS sp.

"(No. 7007. Kuyung. November, 1922.) A tree 60 to 80 feet high, with a high trunk 2 to 3 feet in diameter, found in the mountains north of Tengyueh at altitudes of 7,000 to 8,000 feet. The small elliptical dark-green leaves are thick and leathery, and the burs, an inch in diameter, are covered with branched spines. Each bur contains two or three brown, pubescent, sweet edible nuts."

56301 and 56302. CORNUS CAPITATA Wall. Cornaceæ. **Bentham's cornel.**

"A tree 30 feet high, with a trunk a foot or more in diameter, or at times shrubby. The fruits, about 2 inches in diameter, are strawberrylike in shape and color and have sweet yellow edible flesh. They are very popular with the natives and are often sold in the markets."

For previous introduction, see S. P. I. 56085.

56301. "(No. 6791. October, 1922.) From the lower slopes of the Likiang Snow Range at an altitude of 9,000 feet."

56302. "(No. 7008. Kuyung. November, 1922.) From the mountains north of Tengyueh at an altitude of 7,000 feet."

56303 and 56304. COTONEASTER spp. Malaceæ.

56303. COTONEASTER sp.

"(No. 6742. November 29, 1922.) A stiff, erect, very ornamental shrub 3 to 4

56288 to 56386—Continued.

feet in height, found on the highest point of the Shweli-Salwin watershed (altitude 11,000 feet), at a place called Hsuehshanting [summit of snow mountain], in company with rhododendrons and canebrake. Here during the winter months the mountains are covered with snow, and ice covers the pools and brooks all day. The reddish leaves are small and roundish, and the oval scarlet persistent berries are half an inch in diameter."

56304. COTONEASTER sp.

"(No. 6789. October, 1922.) A stout ornamental prostrate shrub which creeps over limestone rocks on the Likiang Snow Range at an altitude of 10,000 feet. The very small elliptical leaves are dark green, and the small berries are red."

56305. CUPRESSUS sp. Pinaceæ. **Cypress.**

"(No. 6802. Peshwe. October, 1922.) A tall tree 40 to 50 feet high, with a stout trunk, found on margins of meadows north of Ngulukeu at an altitude of 11,000 feet."

56306 and 56307. DEUTZIA spp. Hydrangeaceæ.

56306. DEUTZIA sp.

"(No. 6813. October, 1922.) A very ornamental shrub, with purplish white flowers, found along stream beds on the Likiang Snow Range at altitudes of 10,000 to 11,000 feet."

56307. DEUTZIA sp.

"(No. 7752.) From the Likiang Snow Range."

56308 to 56310. DIOSPYROS spp. Diospyraceæ. **Persimmon.**

56308. DIOSPYROS sp.

"(Tengyueh. November 24, 1922.) A large spreading tree 50 feet tall, with a huge crown, found in the vicinity of Tengyueh, where it freezes every night during the cold season. It is a fine shade tree. The yellow fruits are the size of cherries."

56309. DIOSPYROS sp.

"(No. 6787. October, 1922.) A wild persimmon which grows as a tall, spreading tree on the dry slopes back of Likiang at an altitude of 8,500 feet. The small oval fruits are black."

56310. DIOSPYROS sp.

"(No. 6805. Shiku, Yangtze River. October, 1922.) A large spreading tree which bears black, sweet edible fruits the size of a half dollar."

56311 to 56313. EUONYMUS spp. Celastraceæ.

56311. EUONYMUS PORPHYREUS Loes.

"(No. 6784. October, 1922.) An ornamental shrub 5 to 6 feet high, with red berries, found on the Likiang Snow Range at an altitude of 12,000 feet."

56312. EUONYMUS sp.

"(No. 6809. October, 1922.) A tree 25 feet tall found among limestone rocks on the lower slopes of the Likiang Snow Range at an altitude of 9,000 feet. The leaves are oval heart shaped and the fruits red and yellow."

56313. EUONYMUS sp.

"(No. 6812. October, 1922.) An ornamental tree 30 to 40 feet in height, with rich-green, narrow, sharp-pointed leaves and red fruits. It grows on the Likiang Snow Range at an altitude of 12,000 feet."

56288 to 56386—Continued.

56314. ILEX sp. Aquifoliaceæ. **Holly.**

"(No. 6781. October, 1922.) A wild holly from the Likiang Snow Range at about 12,000 feet altitude. It is an ornamental tree 25 feet high, with leathery dark-green leaves and small yellowish berries."

56315. INDIGOFERA PENDULA Franch. Fabaceæ.

"(No. 6798. October, 1922.) An exceedingly ornamental shrub 10 to 15 feet high, with long racemes of bluish purple flowers, found on the Likiang Snow Range at an altitude of 10,000 to 11,000 feet."

56316. KETELEERIA sp. Pinaceæ.

"(No. 6321. October, 1922.) A handsome tree 50 feet in height, with light-green foliage and long oblong cones, found on the Sungkwe Pass, Hoching Range, two days' travel from Likiang, at an altitude of 11,000 feet."

56317 and 56318. LIGUSTRUM spp. Oleaceæ. **Privet.**

56317. LIGUSTRUM IONANDRUM Diels.

"(No. 6810. October, 1922.) A very compact shrub 10 to 12 feet high, found among limestone bowlders back of Ngulukeu on the Likiang Snow Range at an altitude of 10,000 feet. It has elliptical leaves and short terminal clusters of cream-colored fragrant flowers."

56318. LIGUSTRUM sp.

"(No. 6803. October, 1922.) A tree 40 to 50 feet high, with a trunk 1 to 2 feet in diameter, which grows along watercourses on the Likiang Snow Range at an altitude of 8,500 feet. The small fragrant cream-colored flowers are in large panicles."

56319. LITSEA sp. Lauraceæ.

"(No. 6814. October, 1922.) An ornamental aromatic shrub 10 to 15 feet high, found on the Likiang Snow Range at an altitude of 10,000 to 11,000 feet."

56320 to 56325. MALUS spp. Malaceæ. **Apple.**

56320 and 56321. MALUS YUNNANENSIS (Franch.) C. Schneid.

"A tree 30 to 40 feet high, which grows among limestone bowlders along watercourses on the Likiang Snow Range at altitudes of 10,000 to 12,000 feet. The large oval heart-shaped, coarsely toothed leaves are hairy beneath and the yellowish crimson fruits, an inch in diameter, are in large clusters. One of the handsomest trees of the Likiang Snow Range."

56320. "(No. 6760. October, 1922.)"

56321. "(No. 6764. October, 1922.)"

56322. MALUS sp.

"(No. 6753. October, 1922.) A tree 60 to 80 feet in height, with stout straight branches, which grows on the slopes of the Likiang Snow Range at an altitude of 12,000 feet. The dark-green leaves are silvery beneath, and the oval yellow fruits have sour fragrant flesh and large seeds. The tree is very ornamental."

56323. MALUS sp.

"(No. 6758. October, 1922.) A tree 35 to 40 feet high which is found on the Likiang Snow Range at altitudes of 10,000 to 11,000 feet. The reddish green, strongly veined leaves are whitish beneath, and the numerous fruits are in large clusters."

56288 to 56386—Continued.

56324. MALUS YUNNANENSIS (Franch.) C. Schneid.

"(No. 6762. October, 1922.) A tree 40 feet high, with a dense crown, found on the lower slopes of the Likiang Snow Range among limestone bowlders along watercourses at an altitude of about 10,000 feet. The large leaves are grayish hairy beneath."

56325. MALUS sp.

"(No. 6821. November 30, 1922.) A hardy tree 15 to 20 feet in height, found in dense forest on the Salwin Ridge at an altitude of 8,000 feet. The oblong leaves have red veins and petioles and the calyx portion of the oval yellow fruits is drawn out into a beak. The fruit flesh is firm and sour."

56326 and 56327. MECONOPSIS spp. Papaveraceæ.

56326. MECONOPSIS INTEGRIFOLIA (Maxim.) Franch.

"(No. 6777. October, 1922.) A fine alpine plant 2 feet or more in height found rather commonly at altitudes of 14,000 to 14,500 feet among limestone bowlders on the Likiang Snow Range. The leaves are linear, with the basal ones forming a rosette, and covered with red hairs. The large bright-yellow flowers are 4 inches across."

For previous introduction, see S. P. I. No. 55957.

56327. MECONOPSIS RUDIS Prain.

"(No. 6797. October, 1922.) An alpine plant found on limestone gravel on the Likiang Snow Range at altitudes above 16,000 feet. The glaucous leaves are covered with red spines and the satiny blue flowers, 2 inches across, completely cover the spikes, which are 2 feet in length."

56328 and 56329. OLEA spp. Oleaceæ.

56328. OLEA sp.

"(No. 6737. November 21, 1922.) A large tree 50 feet high, with a trunk a foot in diameter and whitish bark, which grows wild in the forests beyond Wolung and Chienmachin, north of Tengyueh. The narrowly oblong, leathery leaves are dark green, and the small oval, bluish black, juicy fruits are borne in clusters below the leaves."

56329. OLEA sp.

"(No. 6741. November 29, 1922.) A tree 30 feet or more in height, found in the Shweli Valley, two days' travel northeast of Tengyueh near Chiangtso and Chuchi. It has elliptical leaves and small oval, bluish black, juicy fruits."

56330 and 56331. PHOTINIA spp. Malaceæ.

56330. PHOTINIA sp.

"(No. 6800. October, 1922.) A tree 25 feet high from the western slopes of the Likiang Snow Range, in the Ashi Road forest, at an altitude of 10,000 to 11,000 feet. The flowers are white and the small orange-red fruits are in large terminal panicles."

56331. PHOTINIA sp.

"(No. 6815. October, 1922.) An ornamental shrub 5 to 6 feet high, from limestone meadows in the Likiang Snow Range. It has very narrow leaves and clusters of dark carmine fruits."

56288 to 56386—Continued.

56332. PIERIS sp. Ericaceæ.

"(No. 7660. November 27, 1922.) A shrub 6 to 8 feet high with white flowers, collected on the summit of Hsuehshanting at an altitude of 11,000 feet."

56333. PINUS ARMANDI Franch. Pinaceæ. **Pine.**

"(No. 6792. Likiang. October, 1922.) A pine tree 90 feet or more tall, with a straight trunk, common at altitudes above 8,000 feet in the northern part of Yunnan; also from the Black River Valley to Talifu and Likiang."

For previous introduction, see S. P. I. No. 45914.

56334. PRIMULA FORRESTII Balf. f. Primulaceæ. **Primrose.**

"(No. 6811. October, 1922.) A perennial plant which becomes 50 years or more in age, with a thick woody rootstock, found among rocks and under trees in rich soil and also among limestone bowlders on the Likiang Snow Range, at an altitude of 11,000 to 12,000 feet. The large basal leaves have a fresh-apple odor and the rich orange-yellow flowers are in large umbels."

For previous introduction, see S. P. I. No. 48361.

56335. PRUNUS sp. Amygdalaceæ. **Cherry.**

"(No. 6782.) A tree 35 to 40 feet high, which grows on the road from Ashi to the Yangtze River, Likiang Snow Range, at an altitude of 10,000 feet. The globose, bluish black fruits are in drooping clusters."

56336 to 56347. PYRUS spp. Malaceæ. **Pear.**

56336. PYRUS PASHIA Buch.-Ham.

"(November, 1922.) A handsome tree 30 feet high, with a round crown and dark-green heart-shaped leaves, which grows in southern Yunnan in the valleys south of Puerhfu. The yellowish brown globose pears are the size of marbles. The seeds were secured through Miss Clara Peterson, of the Puerhfu Mission."

For previous introduction, see S. P. I. No. 54998.

56337. PYRUS sp.

An unlabeled packet of pear seeds from Yunnan.

56338. PYRUS sp.

"(No. 6752. Chinhaitze, October, 1922.) A sturdy tree 30 to 40 feet in height, with a dense crown and ascending branches, which grows along watercourses on the eastern side of the Likiang Snow Range. The small globose fruits are crimson when ripe."

56339. PYRUS sp.

"(No. 6754. October, 1922.) A wild pear from the lower slopes of the Likiang Snow Range, where it grows at an altitude of 9,600 feet and forms a tree 30 to 40 feet high. The oval pealike fruits are crimson when ripe."

56340. PYRUS sp.

"(No. 6757. October, 1922.) A very handsome tree 35 to 40 feet high, which grows among limestone bowlders along watercourses on the lower slopes of the Likiang Snow Range at an altitude of 10,000 feet. The handsome leaves are dark green above and white beneath, with serrate margins and sharp points, and the fruits are small, oval, and red."

56288 to 56386—Continued.

56341. PYRUS sp.

"(No. 6759. Ganhaitze. October, 1922.) A tree very similar to the preceding [S. P. I. No. 56340] but with few fruits, which are pear shaped and yellow. It grows at an altitude of 10,000 feet on the Likiang Snow Range."

56342. PYRUS sp.

"(No. 6761. October, 1922.) A very ornamental tree 30 to 40 feet in height, which grows along watercourses among limestone bowlders on the Likiang Snow Range. It has oval dark-green leaves, grayish beneath, and red and yellow fruits the size of bullets."

56343. PYRUS sp.

"(No. 6763. October, 1922.) A tree 40 feet high from the Likiang Snow Range, where it grows at an altitude of 14,000 feet. The large oblong, coarsely toothed leaves are dull green above and white beneath, and the small globose yellow fruits, the size of bullets, are in corymbs."

56344. PYRUS sp.

"(No. 6765. October, 1922.) A wild pear which grows on the road from Ashi to the Yangtze River, Likiang Snow Range, at an altitude of 10,000 feet. It is a tree 30 feet high, with large smooth dark-green leaves and fruits 2½ inches in diameter, yellow, with small russet rings and spots."

56345. PYRUS sp.

"(No. 6766. October, 1922.) A tree 30 feet high, with small crimson fruits, found along stream beds among limestone bowlders on the Likiang Snow Range north of Ngulukeu, at an altitude of 10,000 feet."

56346. PYRUS sp.

"(No. 6767. Likiang. October, 1922.)" Seeds of a domesticated pear.

56347. PYRUS sp.

"(No. 6823. Chinho. October, 1922.) A wild pear collected two days' travel south of Likiang, where it grows as a tree 30 to 40 feet in height, with oval-elliptic leaves and small, spotted, russet-brown fruits the size of bullets. This is used as a stock plant."

56348 to 56354. QUERCUS spp. Fagaceæ. **Oak.**

56348. QUERCUS sp.

"(No. 6748. October, 1922.) An oak tree 30 to 40 feet high, found in the forest on the road to Ashi north of Likiang at an altitude of 12,000 feet. The leaves are large, obovate, and coarsely toothed; the acorns are not bitter."

56349. QUERCUS sp.

"(No. 6794. Ashi. October, 1922.) A tree 50 feet tall, with a trunk 3 feet in diameter, found on the Likiang Snow Range in dry regions near the Yangtze River at an altitude of 9,000 feet. The small pale-green leaves are obovate, and the small acorns have papery involucres."

56350. QUERCUS sp.

"(No. 6817. October, 1922.) A tree 50 to 60 feet tall, from the western slopes of the Likiang Snow Range on the road from Ashi to the Yangtze River, at an altitude of 11,000 feet. It has large sessile, oblong-oval laciniate leaves and small edible sweet acorns."

56288 to 56386—Continued.

56351. QUERCUS sp.

"(No. 6822. November 30, 1922.) A tree 30 to 40 feet high, which grows on the Salwin Ridge at an altitude of 8,000 feet. The leaves are dark glossy green, and the obovoid bitter acorns are in spikes several inches long."

56352. QUERCUS sp.

"(No. 7004. Kuyung. November, 1922.) A tall tree, 70 to 80 feet in height, with trunks 3 to 4 feet in diameter, which grows in sandy soil in the mountains north of Tengyueh, at an altitude of 7,500 feet. The numerous acorns are borne in dense spikes 5 or 6 inches long, the involucre inclosing the acorn."

56353. QUERCUS sp.

"(No. 7005. Kuyung. November, 1922.) Very similar to the preceding [S. P. I. No. 56352], except that the acorns are inclosed in a truncate involucre. The tree, 70 to 80 feet tall with trunks 3 to 4 feet in diameter, grows in sandy soil in the mountains north of Tengyueh at an altitude of 7,500 feet."

56354. QUERCUS sp.

"(No. 7009. Kuyung. November, 1922.) A tall tree 70 to 80 feet in height, with large straight trunks 3 or 4 feet in diameter, which grows in the mountains north of Tengyueh at an altitude of 7,000 to 8,000 feet. The acorns are inclosed in conical involucres and are borne in stout, densely packed spikes."

56355 to 56364. RHODODENDRON spp. Ericaceæ.

56355. RHODODENDRON DELAVAYI Franch.

"(Nos. 3012 and 6743. November 27, 1922.) A small tree 15 to 20 feet or more in height, common throughout Yunnan; these seeds were collected on the Salwin-Shweli watershed at an altitude of 8,000 feet. The stiff, spreading narrow leaves are brownish beneath, and the crimson flowers are in large terminal heads."

56356. RHODODENDRON FORTUNEI Lindl.

"(No. 6829. October, 1922.) A shrub or small tree 15 to 20 feet in height, with a trunk a foot in diameter, which grows on the Likiang Snow Range at altitudes of 9,000 to 11,000 feet. The leaves are large and smooth and the large, exceedingly handsome, fragrant light-pink flowers are in large terminal clusters."

56357. RHODODENDRON HELIOLEPIS Franch.

"(No. 6828. October, 1922.) A beautiful compact shrub 10 to 15 feet high, which grows on the edge of alpine meadows in large groves at an altitude of 12,500 feet. In early spring the plant is one mass of flowers; these are lavender with the lower lip purple spotted."

56358. RHODODENDRON TALIENSE Franch.

"(No. 6832. October, 1922.) A shrub 15 feet high, which grows on the upper slopes of the Likiang Snow Range at altitudes of 15,000 to 15,500 feet among limestone bowlders. The leaves are large and whitish mealy beneath, and the large light-pink flowers are in terminal clusters."

56359. RHODODENDRON sp.

An unlabeled packet of rhododendron seeds.

56288 to 56386—Continued.

56360. RHODODENDRON sp.

"(No. 6744. November 28, 1922.) A shrub or small tree which grows on the summit of the Salwin Ridge (Shweli-Salwin Divide) at altitudes of 10,000 to 11,000 feet, in a forest one stage from Chiangtso. The pale-green oblong leaves are whitish beneath, and the flowers, which vary from pink to red, are terminal. The fruits are black and hairy."

56361. RHODODENDRON sp.

"(No. 6745. Hsuehshanting. November 28, 1922.) A shrub 5 to 10 feet high, dense brownish woolly throughout, which is not uncommon on the summit of the Salwin-Shweli watershed at altitudes of 8,000 to 10,000 feet. The flowers are red and are borne at the ends of the branches."

56362. RHODODENDRON sp.

"(No. 6826. October, 1922.) A very handsome shrub 10 to 12 feet high, which occurs on the edge of alpine meadows on the Likiang Snow Range at altitudes of 14,000 to 15,000 feet. The leaves are small and elliptical, and the rich purple flowers an inch and a half wide are in terminal clusters."

56363. RHODODENDRON sp.

"(No. 6827. October, 1922.) A shrub 6 to 10 feet high, found among limestone bowlders on the Likiang Snow Range at an altitude of 11,000 feet. The leaves are small and elliptical, white beneath when young, and the flowers, pink with spotted red lower lips, are in terminal clusters."

56364 RHODODENDRON sp.

"(No. 6830. October, 1922.) A shrub 2 feet high, found in rather dry situations in pine forests on the Likiang Snow Range at an altitude of 11,000 feet. It has small elliptical leaves and small but handsome bluish purple flowers."

56365 and 56366. RIBES spp. Grossulariaceæ.

56365. RIBES sp. **Currant.**

"(No. 6778. October, 1922.) A shrub 5 feet high, with maplelike leaves and long drooping racemes of large oval carmine fruits which are edible, with a sweet acid flavor. This shrub grows on the Likiang Snow Range at an altitude of 15,000 feet."

56366. RIBES sp.

"(No. 6780. October, 1922.) A shrub 4 feet high which grows on the Likiang Snow Range at an altitude of 15,000 feet. The leaves are small and maplelike, and the small oval black fruits, crowned by the persistent calyx, are insipid."

56367 and 56368. ROSA spp. Rosaceæ. **Rose.**

56367. ROSA sp.

"(No. 6747. November, 1922.) A handsome climbing shrub 16 or 18 feet high, from the Likiang Snow Range at an altitude of 11,000 feet, near Yulungtsuin. The white flowers are 2 inches across and the fruits are oval and red."

56368. ROSA sp.

"(No. 6795., October, 1922.) A shrub 8 feet high, with small white flowers and round red fruits, found along watercourses back of Ngulukeu on the Likiang Snow Range at altitudes of 9,000 to 10,000 feet."

56288 to 56386—Continued.

56369. RUBUS LUTESCENS Franch.

"(No. 6749. October, 1922.) This is perhaps the best raspberry of the Likiang Snow Range, where it grows as a small shrub a foot or two high on the western slopes at an altitude of 15,000 feet. The leaves are small and the large deep orange-yellow berries are sweet and very delicious."

56370. SCHIZANDRA AXILLARIS (Blume) Hook. f. and Thoms. Magnoliaceæ.

"(No. 6825. October, 1922.) An ornamental climber which occurs in fir forests on the Likiang Snow Range at altitudes of 11,500 to 12,000 feet. The axillary flowers are magenta in color."

56371 and 56372. SMILAX spp. Smilacaceæ. **Smilax.**

56371. SMILAX sp.

"(No. 6746. November 29, 1922.) A handsome, climbing, thorny shrub which grows on the Shweli-Salwin Divide, in open scrub forest at altitudes of 6,000 to 7,000 feet. The leaves are small and oval and the berries scarlet."

56372. SMILAX sp.

"(No. 6808. October, 1922.) An attractive climber with oblong glaucous leaves and red berries, found on dry slopes among pines on the Likiang Snow Range at an altitude of 10,000 feet."

56373 to 56376. SORBUS spp. Malaceæ. **Mountain ash.**

56373. SORBUS sp.

"(No. 6775. October, 1922.) An ornamental tree 25 feet high, with small pinnate leaves, which grows on the road from Ashi to the Yangtze River, Likiang Snow Range, at an altitude of 10,000 feet. The white fruits are in large clusters."

56374. SORBUS sp.

"(No. 6776. October, 1922.) An ornamental tree 25 to 30 feet high, with large pinnate leaves, which grows on the road from Ashi to the Yangtze River, Likiang Snow Range, at altitudes of 10,000 to 11,000 feet. The white fruits are in large clusters."

56375. SORBUS sp.

"(No. 6779. October, 1922.) A shrub 15 or 16 feet high, found on the Likiang Snow Range at an altitude of about 12,000 feet. The leaves are narrowly pinnate, and the red fruits are in large clusters."

56376. SORBUS sp.

"(No. 6785. October, 1922.) A tree 20 feet in height which grows in forests of *Abies forrestii* on the Likiang Snow Range at an altitude of 12,000 feet. It is very ornamental because of the large clusters of round red berries."

56377. TILIA sp. Tiliaceæ.

"(No. 6801. October, 1922.) A tree 35 to 40 feet high, with large heart-shaped leaves and fragrant flowers, found along watercourses among limestone bowlders on the Likiang Snow Range at an altitude of 11,000 to 12,000 feet."

56378. VACCINIUM sp. Vacciniaceæ.

"(No. 6796. October, 1922.) A bushy shrub 2 to 3 feet high, found under pine trees on the Likiang Snow Range at an altitude of 10,000 to 11,000 feet. The small black berries are edible."

56288 to 56386—Continued.

56379 to 56385. VIBURNUM spp. Caprifoliaceæ.

56379. VIBURNUM sp.

"(No. 6770. October, 1922.) A handsome shrub 15 feet high from alpine meadows and steep slopes of the Likiang Snow Range, where it grows at an altitude of 12,500 feet. It has small wedge-shaped leaves and large corymbs of crimson or carmine berries."

56380. VIBURNUM sp.

"(No. 6771. October, 1922.) A very attractive shrub 4 feet in height with maplelike leaves, found growing among limestone bowlders in the Likiang Snow Range at an altitude of 15,000 feet. The oval crimson berries are in loose panicles."

56381. VIBURNUM sp.

"(No. 6772. October, 1922.) A handsome shrub or small tree 15 feet high, with smooth oval leaves and small drooping clusters of scarlet berries, found on the slopes of the Likiang Snow Range at an altitude of 12,000 feet."

56382. VIBURNUM sp.

"(No. 6773. October, 1922.) A shrub 4 or 5 feet high which grows on the eastern end of the Likiang Plain among limestone rocks, at an altitude of 10,000 feet. It has small hairy oval leaves and large drooping panicles of rich carmine berries."

56383. VIBURNUM sp.

"(No. 6774. October, 1922.) An attractive shrub 6 to 10 feet high, with large hairy, broadly oval leaves and large clusters of carmine-crimson berries. It grows in alpine meadows on the Likiang Snow Range at an altitude of 11,000 feet."

56384. VIBURNUM sp.

"(No. 6786. October, 1922.) A tall shrub 12 to 15 feet in height, which grows at an altitude of 12,000 to 13,000 feet on the Likiang Snow Range. The leaves are smooth and uniformly green, and the crimson berries are in large terminal corymbs."

56385. VIBURNUM sp.

"(No. 6820. November 30, 1922.) An exceedingly handsome shrub 20 feet tall, with large oval leaves and huge terminal clusters of large transparent scarlet berries, found on the summit of the Salwin Ridge at an altitude of 8,000 feet. The juice is used by the natives in pickling turnip leaves."

56386. (Undetermined.)

"(No. 6831. October, 1922.) A handsome tree 15 to 20 feet high, which grows on the western slopes of the Likiang Snow Range at an altitude of 11,000 feet. The large oblong leaves are brownish woolly beneath, and the deep pink or red flowers are in large corymbs."

56387. MEIBOMIA sp. Fabaceæ.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received February 7, 1923.

"(No. 6783. October, 1922.) An ornamental bush 10 feet high, with very attractive deep pink flowers, found on the western and eastern slopes of the Likiang Snow Range at an altitude of 10,000 feet."

56388. FESTUCA OVINA NOVO-ZELANDIAE Hack. Poaceæ. Fescue tussock grass.

From Stanley, Falkland Islands. Seeds presented by the Colonial Secretary. Received January 18, 1923.

Introduced for testing as a forage plant.

A densely tufted perennial grass with culms 12 to 20 inches high and erect, very narrow, cylindric, sharply pointed rough leaves almost as long as the culms. This grass is native to North Island, New Zealand. (Adapted from *Cheeseman, Manual of the New Zealand Flora, p. 917.*)

56389. DIOSPYROS KAKI L. f. Diospyraceæ. Kaki.

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received February 12, 1923.

A semiwild variety with a long pointed fruit used by Japanese nurserymen as a stock plant on which to graft the cultivated kakis.

56390 to 56398.

From China. Seeds presented by C. A. Reed, Bureau of Plant Industry. Received January 10, 1923. Quoted notes by Mr. Reed, unless otherwise stated.

56390. AESCULUS WILSONII Rehder. Æsculaceæ. Horsechestnut.

"(No. 22c. Peking.) Obtained from J. Hers, secretary general, Lunghai Railway Co."

A horsechestnut native to Szechwan and Hupeh, China, which is very closely allied to *Aesculus chinensis*, from which it differs only in a few minor characters. It is a large tree with leaves which are downy when young and white flowers borne in racemes which sometimes become 16 inches in length. The burs are rough but not spiny.

56391. ARACHIS HYPOGAEA L. Fabaceæ. Peanut.

"(No. 45gc. Hangchow, Chekiang.) Typical specimens obtained in the market."

56392 to 56397. CASTANEA MOLLISSIMA Blume. Fagaceæ. Chestnut.

56392. "(No. 17c. Hsinchuang, Chihli.) Nuts obtained from wild trees growing about 32 li (about 9 miles) north of the Ming tombs, among walnut trees of various species. The nuts are of fair size and quality, although not equal to those of S. P. I. No. 56397 from the Lanchow-Changli district, Chihli."

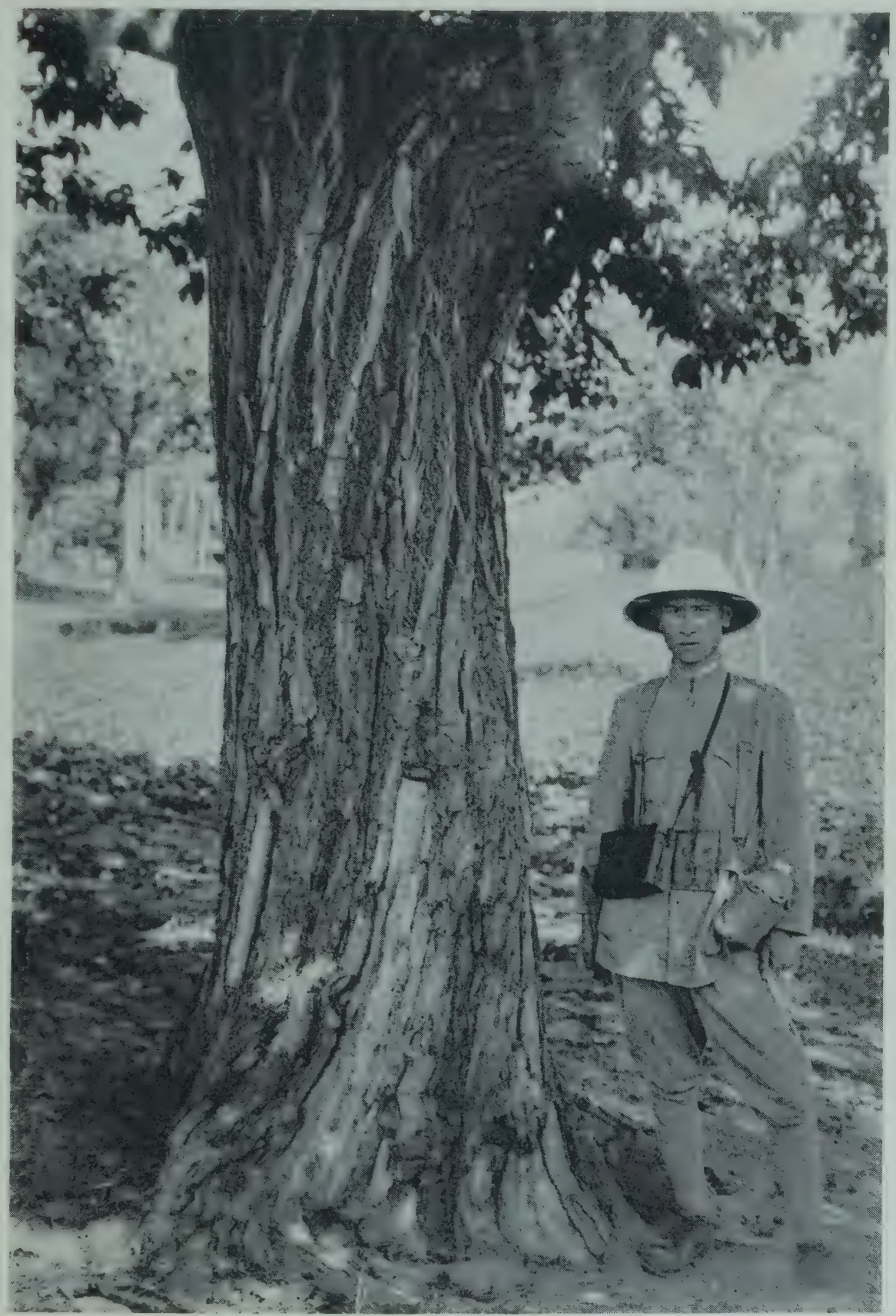
56393. "(No. 18c. Anshan, Chihli. October, 1922.) Nuts obtained on the streets of Anshan, a railroad station between Lanchow and Changli; perhaps originally from north of Lanchow. There are many orchards containing a hundred trees or more about a day's travel north of Lanchow."

56394. "(No. 20c. Tsinan, Shantung.) Typical nuts obtained in the market; probably grown in a chestnut district 15 or 20 miles north of Tsinan."

56395. "(No. 21c. Yihsien, Shantung.) Typical nuts purchased on the streets."

56396. "(No. 34c. Shihkiachwang, Chihli.) Typical specimens from the market."

56397. "(Nos. 58c and 59c. Vanchiachuan, near Gupu, in the Lanchow-Changli district. October 15, 1922.)



A PROMISING CHESTNUT FROM NORTHERN CHINA. (CASTANEA MOLLISSIMA BLUME; S. P. I. No. 56397)

The rapidly progressing destruction of native American chestnut forests by blight has focused the attention of horticulturists upon this Chinese species, which has already shown its adaptability to climatic and soil conditions in this country as well as a remarkable degree of resistance to the disease. It is promising not only as a source of tannin but also for its edible nuts, which are nearly as large and as good as those of the native American chestnut. The attention of the Department of Agriculture was first directed to this species by the late Frank N. Meyer, Agricultural Explorer. (Photographed by C. A. Reed, Vanchiachuan, Chihli, China, September 7, 1922; P36689FS)

PREPARING WALNUTS IN CHINA FOR EXPORT. (JUGLANS REGIA L.; S. P. I. NO. 56418)

According to an estimate made by an official of the United States Department of Commerce, more than 8,000 tons of walnuts were produced in northern China during the year 1921. While less than half this quantity was exported to other countries, the rapid improvement of transportation facilities is almost certain to give an immense stimulus to this industry in China. Few orchards have as yet been planted, however; the bulk of the crop is harvested from scattered trees. The illustration shows the nuts being sun dried in the market place of Wulipu, Shantung Province. (Photographed by C. A. Reed, September 15, 1922; P36739FS)

56390 to 56398—Continued.

A large tree with decidedly sweet nuts."

For an illustration of this chestnut, see Plate III.

56398. CHAETOCHLOA ITALICA (L.) Scribn. Poaceæ. (*Setaria italica* Beauv.) **Millet.**

"(No. 60c. Peking, Chihli.) Millet forms one of the most important cereal foods of the natives of northern China. I consider it delightful as a breakfast food, although among the Chinese it is classed with sweet potatoes as 'coolie food.' There are many varieties ranging in height up to 3 or 4 or even 6 feet, and there are said to be two distinct groups, the ordinary kind and the glutinous kind."

56399 and 56400.

From Darjiling, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Gardens. Received January 8, 1923.

56399. ACER STERCULIACEUM Wall. Aceraceæ. (*A. villosum* Wall.) **Maple.**

A handsome tree with gray bark, native to the northwestern parts of the Himalayas at altitudes of 7,000 to 9,000 feet. It sometimes reaches a height of 80 feet. The thin shining-green leaves are occasionally used for fodder, and the white close-grained wood is beautifully mottled.

56400. BETULA UTILIS D. Don. Betulaceæ. (*B. bhojpattra* Wall.) **Birch.**

A tree about 60 feet in height, with creamy white trunk and branches and bark which peels off in papery flakes. It is native to subtropical regions of the Himalayas. The oval, coarsely toothed, sharp-pointed leaves are dark green above and paler beneath, and 3 inches long. In winter the orange-chocolate color of the twigs is very striking.

56401 to 56437.

From China. Seeds presented by C. A. Reed, Bureau of Plant Industry. Received January 10, 1923. Quoted notes by Mr. Reed, unless otherwise stated.

56401 to 56403. CORYLUS spp. Betulaceæ. **Filbert.**

56401. CORYLUS sp.

"(No. 34ac. Shihkiachwang, Chihli.) Typical nuts from the market, said to have come from trees growing 100 miles south of the town."

56402. CORYLUS sp.

"(No. 45fc. Hangchow, Chekiang.) Nuts bought in the local market, but evidently brought from some distance, presumably western China."

56403. CORYLUS sp.

"(No. 65c. Hwailai, Chihli.) Nuts collected from wild plants growing along the mountainous roadway southeast of the Trappist Monastery."

56404. HOLCUS SORGHUM L. Poaceæ. (*Sorghum vulgare* Pers.) **Sorghum.**

"(No. 42c. Taiyuan, Shansi.) Typical specimens from the market."

56405 to 56426. JUGLANS spp. Juglandaceæ.

56405 to 56408. JUGLANS MANDSHURICA Maxim. **Manchurian walnut.**

56405. "(No. 10c. Nankow Pass, near Nankow, Chihli.) Obtained through J. Hers, of Peking. An uncultivated species with small thick-shelled nuts, not valued very highly by the natives. None of the trees were of large size, 30 feet being the maximum height, with an average height of less than 20 feet. In habit this species resembles *Juglans sieboldiana*."

56406. "(No. 19c. Hsinghuang, Chihli. August, 1922.) Collected in a valley north of the Ming tombs."

56407. "(No. 45ac. Nanking, Kiangsu.) Nuts taken from a tree near the residence of the president of the University of Nanking. The nuts of this species are known here as 'butternuts,' as they are also throughout Chosen and Manchuria."

56408. "(No. 63c. Hwailai, Chihli.) Nuts obtained from wild trees growing southeast of the Trappist Monastery not far from the Great Wall of China."

56409 to 56425. JUGLANS REGIA L. **Walnut.**

56409. "(Nos. 1c, 3c, 4c, 5c, 53c, and 54c. Hwailai, Chihli.) Nuts obtained from thrifty seedling trees in the vicinity of the Trappist Monastery. This place, which has an altitude of about 2,500 feet, is near the northernmost limit at which Persian walnuts are found in China. With these walnut trees were apricots, plums, pears, and peaches."

56410. "(No. 2c. Pienshih, Shansi.) Nuts obtained from a farmer living near Pienshih, a half day's travel west of Fenchow. This is an arid mountainous region with loess soil, subject to severe winters with little precipitation. The temperature falls gradually in the autumn, however, and rises gradually in the spring, which may account for the successful raising of walnuts here and in other parts of northern China."

56411. "(No. 6c. Yihsien, Shantung. October 15, 1922.) Nuts from a young seedling tree in the garden of K. M. Gordon. These nuts ripened on the tree and are of good quality. Usually the walnut crop of China is clubbed from the trees two to five weeks before ripening and the nuts covered with straw and left to sweat and wilt for a period of five to eight days. The hulls are then removed, the nuts superficially cured and then placed on the market."

56412. "(No. 7c. Tsinghua, Honan.) Nuts selected in the market by J. L. Buck, of the University of Nanking, as being typical for that locality."

56413. "(No. 8c. Sinsiang, Honan.) Nuts selected by J. L. Buck, of the University of Nanking, as being typical for that locality."

56414. "(No. 9c. Peking.) From the curio stands on Hattamen Street. Nuts large, very rough, with exceedingly thick, hard shells."

56415. "(No. 11c. Tsingchow, Shantung.) Nuts with very hard shells, purchased in the market and said to have come originally from western China."

56416. "(No. 12c. Tsinan, Shantung.) Typical nuts from the market."

56401 to 56437—Continued.

56417. "(No. 13c. Yihsien, Shantung.) Typical nuts from the market."

56418. "(No. 14c. Wulipu, Shantung.) Typical nuts from the market of this town, which is about 1½ miles southwest of Tsingchow."

For an illustration of this, see Plate IV.

56419. "(No. 15c. Shangyen, Shantung.) Typical nuts from the market."

56420. "(No. 16c. Tsingchow, Shantung. September 15, 1922.) Typical nuts from an orchard about 2½ miles southwest of Tsingchow."

56421. "(No. 39c. Fenchow, Shansi.) Typical nuts from a nut-cracking establishment."

56422. "(Nos. 52c and 55c. Hsinchuang, Chihli.) Large, rough, thick-shelled nuts from wild trees."

56423. "(No. 56c.) Exact source for these nuts in China not known."

56424. "(No. 57c. Tsinan, Shantung.) Typical nuts from the market."

56425. "(No. 64c.) Exact source for these nuts in China not known."

56426. JUGLANS sp. **Walnut.**

"(Nos. 47c, 48c, 50c, and 51c. Hsinchuang, Chihli.) Local types of walnuts."

56427. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. (*Lens esculenta* Moench.) **Lentil.**

"(No. 25c. Yihsien, Shantung.) Lentil seeds obtained in the market."

56428. PHASEOLUS AUREUS Roxb. Fabaceæ. **Mung bean.**

"(No. 31c. Yihsien, Shantung.) Purchased on the streets."

56429. PINUS BUNGEANA Zucc. Pinaceæ. **White-barked pine.**

"(Nos. 40c and 49c. Shansi.) Seeds from a planted forest east of Pingting. The erect, slender trees were not more than 20 or 25 feet tall. The wood was found to be very brittle."

56430 to 56434. SOJA MAX (L.) Piper. Fabaceæ. (*Glycine hispida* Maxim.) **Soybean.**

56430 and 56431. ("Nos. 28c and 29c. Yihsien, Shantung.) Bought on the street."

56430. Yellow beans.

56431. Black beans.

56432 and 56433. "(Nos. 37c and 38c. Taiyuan, Shansi.) From the market."

56432. Big roundish yellow beans.

56433. Black beans.

56434. "(No. 43c. Taiyuan, Shansi.) From the market."

Green roundish beans.

56435 to 56437. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

56435. "(No. 26c. Yihsien, Shantung.) From the market."

Red string beans.

56436. "(No. 30c. Yihsien, Shantung.) From the market."

White string beans.

56401 to 56437—Continued.

56437. "(No. 41c. Taiyuan, Shansi.) From the market."

Pinkish beans.

56438. WASABIA PUNGENS Mats. Brassicaceæ. (*Eutrema wasabi* Maxim.)

From Yokohama, Japan. Plants purchased from the Yokohama Nursery Co. Received February 5, 1923.

A Japanese perennial belonging to the mustard family, with large bright-green, heart-shaped, long-stemmed leaves and white flowers borne in clusters on a flowering stalk over 3 feet in height. The long roots are about an inch in diameter, grayish, with many knots. In the humid valleys in Japan this plant is often spontaneous and is much cultivated on the banks of little streams near dwellings. The grafted roots are used in the same manner as ordinary horse-radish and by many are considered to be superior in all ways. (Adapted from *Vilmorin-Andrieux & Co., Les Plantes Potagères, p. 646.*)

For previous introduction, see S. P. I. No. 41567.

56439. CASTANEA sp. Fagaceæ. **Chestnut.**

From Lancaster, Pa. Nuts presented by J. F. Jones. Received February 3, 1923.

"Nuts sent to me by the Kinshan Arboretum, near Shanghai, China. I do not know where they were originally collected." (*Jones.*)

56440. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Milan, Italy. Seeds purchased from Fratelli Ingegnoli. Received February 19, 1923.

"This clover was grown in clay soil in dry regions in the mountains of central Italy at an altitude of about 1,300 feet, where the climate is hot and the rains infrequent. Olives are grown in the same regions." (*Fratelli Ingegnoli.*)

56441. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Budapest, Hungary. Seeds purchased from the Hungarian Seed Culture Co. Received February 10, 1923.

Locally grown Hungarian red-clover seed introduced for department specialists engaged in clover-breeding experiments.

56442 to 56444.

From Ibarra, Ecuador. Seeds presented by José Felix Tamayo. Received February 10, 1923. Quoted notes by Señor Tamayo.

56442 and 56443. PHASEOLUS spp. Fabaceæ.

56442. PHASEOLUS COCCINEUS L. **Scarlet Runner bean.**

"A wild perennial climber with brown beans which grows here in Ibarra and in the Chota Valley."

56443. PHASEOLUS LUNATUS L. **Lima bean.**

"Perennial climbing plants which grow at altitudes of 5,000 to 8,000 feet in arid or semiarid places where there is an abundant supply of water available."

56444. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"A small wild annual, said to be of bushy habit, from the hot humid region in the lower part of the Rio Mira, where the beans are eaten by the natives."

56445. Hydnocarpus alpina Wight. Flacourtiaceæ.

From Orleans, France. Seeds presented by Edmond Versin, St. Jean le Blanc. Received January 18, 1923.

Introduced for study because of its close relationship to *Taraktogenos kurzii*, the source of the genuine chaulmoogra oil.

A large tree 70 to 100 feet in height, with very variable leaves (red when young and deep green when old), up to 7 inches in length and 2½ inches in width, and dicecious flowers in axillary racemes. The fruit is globose, about the size of an apple, with a brown hairy surface. The seeds yield an oil which is used as fuel, and the wood is employed for general carpentry. The tree is native to the Nilghiri Hills in southern India. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 4, p. 308*, and *Hooker, Flora of British India, vol. 1, p. 197.*)

56446 to 56449.

From Cuenca, Ecuador. Seeds presented by Dr. Federico Malo. Received February 9, 1923. Quoted notes by Doctor Malo.

56446. Medicago sativa L. Fabaceæ. **Alfalfa.**

"(Guanando, Province of Chimborazo. November, 1922.) A celebrated variety."

56447 to 56449. Zea mays L. Poaceæ. **Corn.**

56447. "(Vicinity of Valle, Province of Azuay.) *Maíz blanco*, the largest and best variety of this region."

56448. "*Maíz jesuita*. A variety of the quality of *Maíz blanco*, but with pink kernels. From this the natives make 'mote,' the best one of their favorite dishes."

56449. "(Azogues, Province of Canar, and Province of Azuay. December, 1922.) *Maíz zhima*, a very resistant variety with pearl-colored kernels."

56450 and 56451.

From Elstree, Herts, England. Seed presented by Vicary Gibbs, Aldenham House Gardens. Received February 8, 1923.

56450. Cotoneaster frigida Wall. Malaceæ.

Variety *vicarii*. This is an improved form with deep-green leaves, grayish beneath, and large clusters of rich-red berries which are larger and brighter than those of the typical species.

56451. Pyracantha gibbsii A. Jackson. Malaceæ. **Firethorn.**

A fine ornamental evergreen bush, vigorous and hardy, native to Hupeh and Szechwan, China. It becomes 12 to 14 feet high, is nearly spineless, and in the autumn bears large clusters of scarlet berries which contrast admirably with the glossy dark-green foliage.

For previous introduction, see S. P. I. No. 52938.

56452. Cassia brewsteri F. Muell. Cæsalpiniaceæ.

From Brisbane, Queensland. Seeds presented by E. W. Bick, curator, Brisbane Botanic Gardens. Received February 14, 1923.

A shrub or small tree found in hilly pastures and on river banks in northern Queensland. It becomes 30 or 40 feet high and bears yellow flowers in axillary clusters 3 to 6 inches long. The thick pods are often a foot in length. The pale-yellow close-grained wood is prettily marked. (Adapted from *Bailey, Queensland Flora, pt. 2, p. 455.*)

56453 to 56456. Acer spp. Aceraceæ. **Maple.**

From Darjiling, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Gardens. Received January 8, 1923.

56453. Acer caudatum Wall.

A large tree with dark-gray bark and 5-lobed red-stemmed leaves 2½ to 5 inches long. The shiny, compact, moderately hard wood is white with a faint pink tinge. This maple is found in the temperate Himalayas at altitudes of 7,000 to 11,000 feet.

56454. Acer hookeri Miquel.

A tree 40 to 50 feet high with deeply fissured brown bark, native to the Sikkim Himalayas at altitudes of 8,000 to 10,000 feet. The oval leaves are not lobed and, though usually green, are sometimes copper colored. The wood is gray, with small pores and very numerous fine red medullary rays.

For previous introduction, see S. P. I. No. 47630.

56455. Acer pectinatum Wall.

A small maple closely related to *Acer caudatum*, from which it differs chiefly in foliage characters. It is common in the Sikkim Himalayas at altitudes of 8,000 to 12,000 feet.

56456. Acer sikkimense Miquel.

A small tree with thin gray bark, native to the eastern temperate Himalayas at altitudes of 7,000 to 9,000 feet. The leaves are undivided and up to 6 inches in length. The wood is a shining gray with distinct annual rings, with numerous fine medullary rays.

56457. Dendrocalamus sikkimensis Gamble. Poaceæ. **Bamboo.**

From Sibpur, Calcutta, India. Seeds obtained from the Royal Botanic Garden, Sibpur, and presented by E. M. Ehrhorn, Division of Plant Inspection, Honolulu, Hawaii. Received January 17, 1923.

A beautiful tufted bamboo native to Sikkim, India, where the dark-green culms reach a height of 60 feet or more and a diameter of 5 to 7 inches. The species is easily distinguished by its large reddish brown, globular flower heads and densely velvety stem sheath. The long narrow leaves are said to be poisonous, and from the stems are made the "chungas," or native buckets, used for carrying water and milk and for churning. (Adapted from *Annals of the Royal Botanic Garden, vol. 7, p. 82.*)

For previous introduction, see S. P. I. No. 55815.

56458. Trifolium johnstoni Oliver. Fabaceæ. **Clover.**

From Kilossa, Tanganyika Territory, East Africa. Seeds presented by Capt. Charles M. F. Swynnerton, Kilossa, through Dr. H. L. Shantz, Bureau of Plant Industry. Received January 17, 1923.

"At high altitudes in East Africa clover is one of the prominent forage plants. It grows where the temperature probably never exceeds 85° F. and where for the greater part of the year it is much below this point. However, no frosts occur in the region." (*Shantz.*)

A smooth perennial clover with the habit of white clover (*Trifolium repens*), found at an altitude of 10,000 feet on Kilimanjaro, Tanganyika Territory. The leaves are long stemmed, with membranous leaflets and globose flower heads about an inch in diameter. (Adapted from *Transactions of the Linnean Society, 2d ser., vol. 2, p. 331.*)

56459 and 56460. MALUS spp. Malaceæ. **Apple.**

From western Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received January 18, 1923. Quoted notes by Mr. Rock.

56459. MALUS sp.

"(No. 6724. November 9, 1922.) A wild apple tree 30 feet high, with wide-spreading branches, found in sandy soil along watercourses between Tsinchi and Chansi on the Tengyueh-Sadon Trail, at an altitude of 6,500 feet. The very numerous dark-carmine long-stemmed fruits are the size of small cherries."

56460. MALUS sp.

"(No. 6734. November 12, 1922.) A wild apple tree 25 feet high, with long whiplike ascending branches, found in sandy loam on the hills back of Mengka at an altitude of 5,700 feet. The dark-carmine fruits are half an inch in diameter."

56461. CASTANOPSIS ARGENTEA (Blume) A. DC. Fagaceæ. **Chestnut.**

From Buitenzorg, Java. Seeds presented by Carl Hartley. Received January 18, 1923.

"Seeds of this edible chestnut were collected in western Java." (*Hartley.*)

An evergreen tree 50 to 60 feet high, with narrow thin leaves 5 to 7 inches long and very dense clusters of spiny burs; each bur is about 2 inches wide and contains normally a single nut an inch in diameter.

For previous introduction, see S. P. I. No. 55811.

56462. DATURA INNOXIA Mill. Solanaceæ.

From San Luis Potosi, S. L. P., Mexico. Seeds purchased through Walter F. Boyle, American consul. Received January 18, 1923.

Introduced for the use of specialists studying the genus Datura.

A plant with a purplish stem 3 to 4 feet high, with several strong branches and oblong heart-shaped leaves. The large erect, axillary white flowers are succeeded by oval fruits which are covered with long, soft, harmless spines. (Adapted from *Journal of the Washington Academy of Sciences, vol. 11, p. 179.*)

56463. EUTERPE EDULIS Mart. Phœnicaceæ. **Palm.**

From Georgetown, Demerara, British Guiana. Seeds presented by R. Ward, superintendent, Botanic Gardens, through Dr. B. E. Dahlgren, of the Field Museum, Chicago, Ill. Received January 18, 1923.

A shade-loving palm with a slender, generally inclined trunk 30 to 40 feet in height and edible fruits about the size of marbles. The inhabitants of Para, Brazil, where this palm is native, prepare a nutritious beverage from the thin coating of fibrous flesh surrounding the seed.

56464 to 56471. SACCHARUM OFFICINARUM L. Poaceæ. **Sugarcane.**

From Georgetown, Demerara, British Guiana. Seeds presented by James Crabtree, superintendent, British Guiana Sugar-Planters' Experiment Station. Received January 19, 1923. Quoted notes by Mr. Crabtree.

"All of the following varieties grow strongly here and do not appear to suffer from any disease, except leaf spots on the Java seedlings. I have never seen any evidence of mosaic disease on them. These are not regarded as good commercial varieties here. The minimum temperature in the sugar belt is 70° F."

56464 to 56471—Continued.

56464. *Java 139.* 56465. *Java 228.*

"The three following varieties are very closely similar."

56466. *Bamboo.* 56467. *Uba.*

For previous introduction, see S. P. I. No. 41154.

56468. *Zwinga.*

"The following thin purple canes are probably Indian; they produce fertile seeds and the seedlings resemble the parent fairly closely."

56469. *Brekeret.*

56470. *Kamba Kamba Sati.*

56471. *Kara Kara Wa.*

56472 to 56477.

From Yunnan, China. Collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received January 24, 1923. Quoted notes by Mr. Rock.

56472. CASTANOPSIS sp. Fagaceæ. **Chestnut.**

"(No. 6729. Mengka. October 12, 1922.) Seeds of a tree 50 to 60 feet high, which grows in the mountains at an altitude of 6,500 feet. The glossy glabrous leaves are ovate-acuminate and toothed near the apices, and the burs, an inch to an inch and a half in diameter, inclose two or three brown hairy nuts in each bur. The bur is quite similar to that of *Castanopsis armata.*"

56473. LIGUSTRUM sp. Oleaceæ. **Privet.**

"(No. 7670. November 30, 1922.) Seeds of a small tree 20 feet high, found in dense forest on the Salwin Ridge at an altitude of 8,000 feet. This is evidently a very ornamental tree, judging by the large panicles, which bear numerous bluish black fruits."

56474 and 56475. MALUS spp. Malaceæ. **Apple.**

56474. MALUS sp.

"(Puerhfu. December, 1922.) Seeds of a wild apple tree which grows in the hills at an altitude of 6,000 feet. The small globose fruits are yellowish with a tinge of pink on the sun-exposed side. Obtained through Miss Clara Peterson, a missionary of Puerhfu."

56475. MALUS sp.

"(Puerhfu. December 6, 1922.) Seeds of a wild apple tree obtained from the hills at an altitude of 6,000 feet, by Miss Clara Peterson, a missionary of Puerhfu."

56476. PYRUS sp. Malaceæ. **Pear.**

"(Szemao. December, 1922.) Seeds of a wild pear tree from the mountains; obtained through Miss Clara Peterson, a missionary of Puerhfu."

56477. ROSA sp. Rosaceæ. **Rose.**

"(December 3, 1922.) Cuttings of a wild rose found in the valley of the Upper Salwin. It is very attractive with thousands of large white flowers, each 3 inches across, and could easily be trained on arbors. Strange to say, the flowers are double; perhaps it is a sport."

56478 to 56482. SACCHARUM OFFICINARUM L. Poaceæ. **Sugarcane.**

From Santiago de las Vegas, Cuba. Seeds presented by Dr. Mario Calvino, Estación Experimental Agronómica. Received January 25, 1923. Quoted notes by Doctor Calvino.

"All of these are good sugar-producing canes but are subject to yellow-stripe disease."

56478. "*Cuba 450*. Seedling of *Demerara 419*, obtained in 1917–1918."

56479. "*Cuba 519*. Seedling of *Demerara 99* obtained in 1918–1919."

56480. "*Demerara 74*."

56481. "*Demerara 99*."

56482. "*Demerara 108*."

56483 to 56487.

From Loanda, Angola, Africa. Seeds presented by John Gossweiler. Received January 30, 1923.

56483. ASPARAGUS AFRICANUS Lam. Convallariaceæ.

"This asparagus is a great delicacy and in my opinion better than any of the cultivated kinds." (*Sir Percy Fitzpatrick, in note under S. P. I. No. 32271.*)

A much-branched tall shrub native to many places in tropical and South Africa. The main branches are woody, and the leaves are spiny at the base. The 1-seeded berries are a sixth of an inch in diameter. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 7, p. 433.*)

56484. MELINIS MINUTIFLORA Beauv. Poaceæ. **Molasses grass.**

"John Morley, of Lake Alfred, Fla., informed me that the molasses grass (*Melinis minutiflora*) was so successful on his place that he is going to get a large quantity of seeds for the planting of a very considerable area of it. He said the trouble which other people who had tried to use this grass experienced was, apparently, that they did not keep it grazed or cut closely enough. When permitted to grow unmolested it is likely to get rank." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 54680.

56485. MUSA GILLETII Wildem. Musaceæ. **Banana.**

A close relative of the Abyssininian banana (*Musa ensete*), native to the vicinity of Kisantu, Belgian Congo. It is a plant up to 6½ feet high, with the lower leaves reaching a length of 5 feet and the upper leaves becoming smaller and smaller until they merge into the floral bracts. The fruits, 2 inches long, are oblong and somewhat pear shaped, with a grayish surface irregularly marked because of the prominence of the seeds. The powdery pulp incloses shiny black seeds. (Adapted from *Revue des Cultures Coloniales, vol. 8, p. 102.*)

56486. RUMEX ABYSSINICUS Jacq. Polygonaceæ.

"This Rumex has proved a most interesting plant, reaching a height of from 7 to 8 feet in one season and yielding, from the first of June all through the summer, an abundance of succulent green leaves which make an excellent substitute for spinach. It promises to be an excellent plant for our Southern States where summer green-leaved vegetables are very scarce." (*Peter Bisset.*)

For previous introduction, see S. P. I. No. 48023.

56487. NATHUSIA ALATA Hochst. Oleaceæ. (*Schrebera alata* Hochst.)

A tree of moderate size, native to Abyssinia and parts of British East Africa, with large compound leaves having winged stems and small white flowers, tinged with lilac, borne in lax terminal clusters. The timber is very hard.

56488 to 56494.

From China. Seeds collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received February 9, 1923. Quoted notes by Mr. Rock.

56488. CASTANEA sp. Fagaceæ. **Chestnut.**

"(No. 6436. October, 1922.) A tall tree 60 to 70 feet high, with a trunk 3 to 4 feet in diameter, found wild in a dry district of the Shiku Valley, Yangtze River, two days' travel west of Likiang."

56489. CASTANOPSIS sp. Fagaceæ.

"(No. 6739. November 29, 1922.) A fine tree 60 to 80 feet tall, with a straight trunk 2 to 3 feet in diameter, found in an oak and pine forest in the Shweli Valley, between Chiangtso and Linchiapu, on the Shweli-Salwin watershed, two days' travel north of Tengyueh at an altitude of about 7,000 feet. In this region at this time of the year there is frost every night.

"The slightly crenate leaves are oblong, silvery glaucous beneath and dark green above, and the small burs, with short thick spines, are in axillary spikes 4 or 5 inches long. The small nuts are at first brown, later becoming black, and they are sweet in taste."

56490. CORYLUS sp. Betulaceæ. **Filbert.**

"(No. 6756. October, 1922.) A tree 50 feet high, with trunks 2 or 3 feet or more in diameter, found wild among limestone bowlders and humus on the Likiang Snow Range at an altitude of 10,000 feet. The nuts are large and edible."

56491. PYRUS sp. Malaceæ. **Pear.**

"(November, 1922.) A fine tree with a dense round crown from the mountains near Puerhfu. The white flowers are borne in great profusion and the fruits remain for a long time on the tree, becoming black and sweet. This is the species used in southern Yunnan as a stock for the cultivated pears. Obtained through Miss Clara Peterson, of the Puerhfu Mission."

56492. QUERCUS sp. Fagaceæ. **Oak.**

"(No. 6818. October, 1922.) A tall tree 50 to 60 feet in height, from the western slopes of the Likiang Snow Range, on the road to the Yangtze River at an altitude of 11,000 feet. The leaves are lanceolate and entire and the acorns oblong."

56493. ZIZIPHUS sp. Rhamnaceæ.

"(No. 6824. October, 1922.) A handsome spreading tree 30 feet high, with a round crown, found above Yangpi two days' travel from Talifu, at an altitude of 7,500 feet. The leaves are large, oval, and finely serrate, and the tree was loaded with olive-shaped drupes."

56494. (Undetermined.)

"(No. 6740. November 28, 1922.) *He ko* (black fruit tree). A tree 25 to 30 feet high with tall, spreading, drooping branches, which grows commonly on the trail to Chuchi, one day's journey northeast of Tengyueh. The tree was loaded with fleshy, bluish black 3-lobed capsular fruits; the one fertile lobe contained an oily, bitter seed. The fruits are gathered by the natives, dried, pressed, and heated, and an oil extracted which is used for lighting purposes."

56495 to 56498.

From Burringbar, New South Wales. Seeds presented by B. Harrison. Received February 7, 1923. Quoted notes by Mr. Harrison.

56495 to 56498—Continued.

56495. ACACIA sp. Mimosaceæ.

"The 'creeping wattle' is 4 or 5 feet high, growing in sandy soil near the sea. As the branches take root on the surface of the ground, this may prove of value as a sand binder."

56496. AMARANTHUS sp. Amaranthaceæ.

"A new 'Chinese spinach.'"

56497. TIBOUCHINA sp. Melastomaceæ.

"A splendid native pink-flowered shrub which grows to a height of 5 or 6 feet."

56498. VIGNA CYLINDRICA (Stickm.) Skeels. Fabaceæ. **Catjang.**

"'Edible white Bechuana cowpea.' This produces heavy crops on long runners."

56499 and 56500. PERESKIA BLEO (H. B. K.) DC. Cactaceæ. Cactus.

From Gatun, Canal Zone. Presented by J. A. Close. Received February 5, 1923.

"This cactus, which is also known under the name of *Pereskia panamensis*, is not uncommon in Panama and is also found in Colombia. In the city of Panama it is sometimes cultivated in the yards. It has large yellow flowers and peculiar truncated fruits. As a greenhouse plant it does well but rarely flowers." (*J. N. Rose.*)

56499. Cuttings. 56500. Fruits.

56501 to 56521.

From Simferopol, Crimea. Seeds presented by George Nikolaevich Visozki, professor of agronomy, Crimean Agricultural Institute, through Herbert Hoover, chairman, American Relief Administration. Received January 25, 1923. Quoted notes by Professor Visozki.

"These seeds were collected in 1922, mostly in the Koyash and Bodrac estates of the Crimean Agricultural Institute, in the southern part of the Crimea along the Boulganac Valley, 17 or 18 versts (about 12 miles) west of Simferopol. Some were collected on the virgin steppes of the Askania-Nova estate."

A collection of wild and cultivated grasses from the Crimea. Many are widely known species, but they are introduced for cultural and comparison tests with American-grown forms.

56501 and 56502. AGROPYRON spp. Poaceæ. **Grass.**

56501. AGROPYRON CRISTATUM (L.) Gaertn.

"(Nos. 1 to 3.) A very good grass for dry regions. Native name *jitniak*."

For previous introduction, see S. P. I. No. 28306.

56502. AGROPYRON INTERMEDIUM (Host) Beauv.

"(No. 4.) Very good for dry soils, especially on slopes."

For previous introduction, see S. P. I. No. 30016.

56503. AVENA STERILIS L. Poaceæ. **Wild oats.**

"(No. 36.) Found as a weed among cultivated plants on the steppes of southern Crimea."

For previous introduction, see S. P. I. Nos. 25361-25363.

56504. BECKMANNIA ERUCAEFORMIS (L.) Host. Poaceæ. **Grass.**

"(No. 21. Askania Nova.) A very good fodder plant for growing on moist soil."

For previous introduction, see S. P. I. No. 20214.

56501 to 56521—Continued.

56505. BROMUS VARIEGATUS Bieb. Poaceæ. **Grass.**

"(No. 14.) A grass found commonly in the Crimea in wild places and also in cultivated land."

56506 and 56507. FESTUCA spp. Poaceæ. **Grass.**

56506. FESTUCA ELATIOR L.

"(No. 25. Koyash and Bodrac estates.) A grass which grows in low-lying places."

For previous introduction, see S. P. I. No. 32216.

56507. FESTUCA OVINA L.

"(Nos. 23 and 24. Koyash and Bodrac estates.) A grass growing wild on the steppes and in unplowed ground."

For previous introduction, see S. P. I. No. 20738.

56508 and 56509. HORDEUM spp. Poaceæ. **Grass.**

56508. HORDEUM MARITIMUM Roth.

"(No. 34. Koyash estate.) Grows in salty soil in meadows."

For previous introduction, see S. P. I. No. 49807.

56509. HORDEUM NODOSUM L.

"(No. 35.) A grass growing in salty places."

56510. KOELERIA GRACILIS Pers. Poaceæ. **Grass.**

"(No. 22.) Growing on the steppes."

56511. LOLIUM MARSCHALLII Stev. Poaceæ. **Grass.**

"(No. 29. Koyash estate.) Common on sloping meadows."

56512. MELICA CILIATA L. Poaceæ. **Grass.**

"(No. 26.) Grows along slopes in unplowed ground and in low-lying places."

For previous introduction, see S. P. I. No. 53149.

56513. PANICULARIA FLUITANS (L.) Kuntze. Poaceæ. **Grass.**

"(No. 30.) An aquatic grass."

56514. POA PRATENSIS L. Poaceæ. **Kentucky bluegrass.**

"(No. 28.) A rather common meadow grass."

56515 to 56517. STIPA spp. Poaceæ. **Grass.**

56515. STIPA CAPILLATA L.

"(No. 11. Askania Nova.) The most popular pasture grass here."

For previous introduction, see S. P. I. No. 20686.

56516. STIPA PENNATA LESSINGIANA (Trin. and Rupr.) Richter.

"(No. 13.) A type with downy sheaths; grows on dry soil."

56517. STIPA PENNATA L. **Feathergrass.**

"(No. 12.) A feathery grass from the foothill steppes."

56518 to 56521. TRITICUM spp. Poaceæ.

56518. TRITICUM CYLINDRICUM (Host) Ces. Pas. and Gib.

"(No. 10.) A grass from the plains."

For previous introduction, see S. P. I. No. 20689.

56501 to 56521—Continued.

56519. TRITICUM MONOCOCCUM L. Wild wheat.

"(No. 7.) A wild wheat supposed to be the parent of our present types. The native Tatar name is *orkish*."

56520. TRITICUM OVATUM (L.) Rasp.

"(No. 8.) A grass from the plains."

For previous introduction, see S. P. I. No. 30112.

56521. TRITICUM TRIUNCIALE (L.) Gren. and Godr.

"(No. 9.) A grass from the plains."

56522. × MALUS MAGDEBURGENSIS Zimmerm. Malaceæ. Apple.

From Glasnevin, Ireland. Plant presented by J. W. Besant, acting keeper, Royal Botanic Gardens. Received January 26, 1923.

This is in all probability a hybrid between *Malus spectabilis* and *M. dasyphylla*, discovered among some old trees by the municipal gardener, Mr. Schoch, in Magdeburg, Germany. The old parent trees were probably introduced from Japan early in the past century, and some years ago Mr. Schoch moved the hybrids out into the open, where they are now fine growing trees. (Adapted from *Möller's Deutsche Gärtner-Zeitung, vol. 20, p. 254.*)

56523 to 56527. LESPEDEZA spp. Fabaceæ.

From Kagoshima, Japan. Seeds presented by Dr. Takeo Kusano, Kagoshima Imperial College of Agriculture and Forestry. Received February 3, 1923.

A collection of native Japanese bush clovers introduced for department forage-crop specialists.

56523. LESPEDEZA BICOLOR INTERMEDIA Maxim.

Yama-hagi.

56524. LESPEDEZA BICOLOR SIEBOLDI (Miquel) Maxim.

Miyagino-hagi.

56525. LESPEDEZA JUNCEA Pers.

Variety *latifolia*. *Hai-medo-hagi.*

56526. LESPEDEZA JUNCEA SERICEA (Miquel) Forbes and Hemsl.

Medo-hagi.

56527. LESPEDEZA PILOSA (Thunb.) Sieb. and Zucc.

Neko-hagi.

56528 to 56535.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received February 1, 1923.

56528. ALANGIUM CHINENSE (Lour.) Rehder. Cornaceæ. (*Marlea begoniaefolia* Roxb.)

"A tree, hardy here, but loses its leaves in winter, which might not happen in a warmer climate." (*Proschowsky.*)

A tall tree, up to 60 feet in height, with oval leaves about 8 inches in length and clusters of small whitish fragrant flowers. It is a native of Africa and southeastern Asia. This tree might be grown in the extreme southern United States.

For previous introduction, see S. P. I. No. 44859.

56529. ARBUTUS CANARIENSIS Duham. Ericaceæ.

56528 to 56535—Continued.

"A beautiful evergreen tree attaining a height of 40 feet. It is, as the name indicates, a native of the Canary Islands. It has pretty rose-colored flowers in racemes, followed by orange-colored fruits about an inch in diameter, which are very beautiful as seen against the shining-green foliage. The fruits are sweeter and more pulpy than those of the strawberry tree and are considered very good by the natives in spite of their rather numerous seeds. The bark is smooth and very thin, the wood rose colored and useful in cabinetmaking. This species should be used by plant breeders in hybridizing with the strawberry tree, *Arbutus unedo*." (*W. T. Swingle.*)

For previous introduction, see S. P. I. No. 36529.

56530. BENTINCKIA NICOBARICA (Kurz) Beccari. Phœnicaceæ. Palm.

An elegant little palm with a habit resembling that of a Kentia; its native home is the Nicobar Islands, Indian Ocean. The pinnate, irregularly divided fronds are large and spreading, and the branched spadix bears small purplish berries.

For previous introduction, see S. P. I. No. 51707.

56531. CORDIA ROTHII Roem. and Schult. Boraginaceæ.

A small tree found in dry situations in northwestern and southern India; the fruit is eaten both raw and pickled by the poorer classes, and rope is made from the inner bark. The tough, hard gray wood is used for building purposes.

56532. DENDROCALAMUS STRICTUS (Roxb.) Nees. Poaceæ. Bamboo.

"A strikingly beautiful plant." (*Proschowsky.*)

A very tall bamboo, up to 100 feet in height, which is native to India and parts of Burma. It grows in drier situations than most bamboos and endures great cold as well as dry heat. It is useful for the consolidation of embankments on account of the network of fibrous roots, and its strength and solidity render it fit for many technical purposes. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 165.*)

For previous introduction, see S. P. I. No. 53610.

56533. FICUS CAPENSIS Thunb. Moraceæ.

A lofty tree 50 feet or more in height, which grows commonly in the forests of the southeastern parts of South Africa. It flowers twice a year, the flowers appearing in large bunches on the trunk or even on its main roots near the trunk. The fruits become as large as the smaller varieties of cultivated figs; the pulp is sweetish but rather dry. (Adapted from *Marloth, Flora of South Africa, vol. 1, p. 135.*)

56534. SOLANUM CYANANTHUM Dunal. Solanaceæ.

A spiny shrub from the desert regions in the vicinity of the Rio Sao Francisco, Brazil. The leaves are long stemmed, very large, heart shaped, white tomentose beneath, and about 9 inches wide. The large sky-blue flowers, about 2 inches across, are in few-flowered racemes.

56535. TECOMA GARROCHA Hieron. Bignoniaceæ.

"A small glabrous shrub, native to Argentina. It is strikingly handsome with its slender racemes of bright-yellow and scarlet flowers and is smaller and more graceful than *Tecoma stans*." (*Alfred Rehder.*)

56536. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Paris, France. Seeds purchased from Messrs. Rouget & Van der Walle. Received March 16, 1923.

Locally grown seed from central France, introduced for specialists in the department engaged in clover breeding.

56537 to 56549.

From Shantung, China. Scions sent in by K. M. Gordon, South Shantung Industrial and Agricultural School of the American Presbyterian Mission (North), at the request of C. A. Reed, Bureau of Plant Industry. Received February 12, 1923.

56537 to 56541. CASTANEA MOLLISSIMA Blume. Fagaceæ. **Chestnut.**

56537. No. 1.
56538. No. 2.
56539. No. 3.
56540. No. 4.
56541. No. 5.

56542. DIOSPYROS KAKI L. f. Diospyraceæ. **Kaki.**

"This persimmon is extensively used for drying." (*Gordon.*)

56543 to 56549. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

56543. No. 1.
56544. No. 2.
56545. No. 3.
56546. No. 4.
56547. No. 5.
56548. No. 6.
56549. No. 7.

56550. SPERGULA ARVENSIS L. Silenaceæ. **Spurry.**

From Paris, France. Seeds purchased from Messrs. Vilmorin-Andrieux & Co. Received February 15, 1923.

Seeds of common spurry, introduced for department forage-crop specialists.

For previous introduction, see S. P. I. No. 1494.

56551. TRIFOLIUM FRAGIFERUM L. Fabaceæ. **Strawberry clover.**

From Melbourne, Victoria. Seeds purchased from F. H. Brunning. Received February 15, 1923.

"Strawberry clover is a perennial suitable as a pasture plant for wet, marshy ground. It has spreading stems, pink flowers, and foliage very similar to that of White Dutch clover. The name is derived from the fact that the seed heads resemble the strawberry in appearance." (*Brunning.*)

56552 to 56557. ORYZA SATIVA L. Poaceæ. **Rice.**

From Manila, Philippine Islands. Seeds presented by Adn. Hernandez, director, Bureau of Agriculture. Received February 19, 1923. Quoted notes by Mr. Hernandez.

"The following are white, nonglutinous varieties and have been tested under lowland conditions. They were grown at the Rosales Rice Station, Rosales, Pangasinan."

56552. "(No. 1.) *Apostol.* A nonbearded variety tested two years under lowland conditions; matures usually in 144 days. Average yield per hectare, 2,283 kilograms (approximately 2,000 pounds per acre)."

56553. "(No. 6.) *Cavetenia I.* A bearded variety tested three years under lowland conditions; matures usually in 154 days. Average yield per hectare, 2,014 kilograms (approximately 1,800 pounds per acre)."

56552 to 56557—Continued.

56554. "(No. 5.) *Cayading a Nalabaga.* A bearded variety tested four years under lowland conditions; matures usually in 187 days. Average yield per hectare, 2,502 kilograms (approximately 2,200 pounds per acre)."

56555. "(No. 4.) *Macanining.* A bearded variety tested three years under lowland conditions; matures usually in 169 days. Average yield per hectare, 2,349 kilograms (approximately 2,100 pounds per acre)."

56556. "(No. 3.) *Mimis a Nalabaga.* A nonbearded variety; matures usually in 184 days. The value of this variety has not yet been fully determined."

56557. "(No. 2.) *Mimis a Purao.* A nonbearded variety tested four years under lowland conditions; matures usually in 188 days. Average yield per hectare, 3,245 kilograms (approximately 2,900 pounds per acre)."

56558. PISTACIA VERA L. Anacardiaceæ. **Pistache.**

From Palermo, Italy. Plants presented by Antonio D'Alia, Casa Agricola, Piana dei Greci. Received February 23, 1923.

A locally grown variety introduced for department specialists engaged in pistache investigations.

56559 to 56570.

From Hobart, Tasmania. Seeds presented by L. A. Evans, Secretary of Agriculture, Agricultural and Stock Department. Received February 16, 1923.

56559 to 56561. ACACIA spp. Mimosaceæ.

56559. ACACIA ELATA A. Cunn.

A handsome unarmed tree 60 feet or more in height, with the young shoots often tinged with a golden yellow pubescence. The globular yellow flower heads are in clusters often 6 inches long. The tree is native to New South Wales. (Adapted from *Bentham, Flora Australiensis, vol. 2, p. 413.*)

56560. ACACIA LINIFOLIA PROMINENS (A. Cunn.) Moore.

An unarmed shrub 12 to 18 feet high, with angular branchlets and very narrow phyllodia (leaflike stems). The very small globular yellow flower heads are borne in racemes about as long as the phyllodia. Native to New South Wales.

56561. ACACIA SALIGNA (Labill.) Wendl.

The "weeping wattle," an ornamental acacia found in West Australia, is a tall shrub or small tree, 10 to 30 feet in height, with long thick phyllodia (leaflike stems) and short clusters of rather large globular flower heads. This is said to be the principal source of tan bark in southwestern Australia.

56562. BILLARDIERA LONGIFLORA Labill. Pittosporaceæ.

A twining shrub sometimes many feet in length, with leaves varying in shape from oval to linear and solitary flowers which are greenish yellow, often changing to purple. It is found in thickets and along watercourses in New South Wales, Victoria, and Tasmania. (Adapted from *Bentham, Flora Australiensis, vol. 1, p. 123.*)

56563. CANDOLLEA GRAMINIFOLIA (Swartz) F. Muell. Candolleaceæ.
(*Stylidium graminifolium* Swartz.)

An ornamental Australian plant with stiff grasslike leaves, sometimes 9 inches long, and

56559 to 56570—Continued.

always growing in a tuft from the end of a very short stem, and scapes 6 to 18 inches long bearing a simple raceme of pink flowers.

For previous introduction, see S. P. I. No. 44324.

56564. CASUARINA SUBEROSA Otto and Dietr. Casuarinaceæ.

A tree 30 to 40 feet tall, quite similar to *C. equisetifolia*, with smooth, slender branchlets. It is considered a valuable fodder tree in the interior districts which are subject to drought. The wood is of great beauty for cabinetwork, but should be used only in veneers, as it is apt to split in drying.

56565. CERVICINA GRACILIS (Forst.) J. Britten. Campanulaceæ.
(*Wahlenbergia gracilis* DC.)

A very variable species, either a slender annual 6 to 18 inches high or a perennial with a rootstock which is almost woody. The leaves vary in shape from oval to linear, and the blue flowers, up to an inch across, are borne singly on long stems. The plant is native to many parts of Australia, extending to New Zealand and perhaps to the East Indies.

56566. DANTHONIA SEMIANNULARIS (Labill.) R. Br. Poaceæ. **Grass.**

Spreading through the pastures, this native grass, known as *wallaby grass*, is becoming very popular, and rightly so. It is a perennial tufted grass, producing a fair amount of soft succulent fodder suitable for either sheep or cattle. The leaves are narrow, usually hairy, and light green. The flower stems grow to a height of about 2 feet, and the seed, which sheds easily, is produced in clusters that have a white woolly appearance when ripe. *Wallaby grass* provides good pasturage during the spring and summer and remains green in the winter months. (Adapted from *The Agricultural Gazette of New South Wales, vol. 28, p. 286.*)

For previous introduction, see S. P. I. No. 49018.

56567. EUCALYPTUS REGNANS F. Muell. Myrtaceæ.

A large tree, the largest, in fact, in Australia; trees 300 feet tall are known in Victoria, and Mueller states that frequently a height of 400 feet is reached. The trunks are whitish and very straight, and the narrow leaves, shining on both sides, are of rather thin texture. The wood is well adapted for shingles, planking, and general construction. (Adapted from *Maiden, A Critical Revision of the Genus Eucalyptus, vol. 1, p. 183.*)

56568. EXOCARPUS CUPRESSIFORMIS Labill. Santalaceæ.

Usually a tree about 20 feet in height, with very numerous green rigid wiry, apparently leafless branches; the leaves are reduced to minute scales. The flowers are very small, appearing in short spikes; usually only one of these flowers is fertilized, and the small roundish nut is borne on a red succulent stem which is eaten by the natives. The close-grained handsome wood is used for cabinetwork and for tool handles. Native throughout Australia.

56569 and 56570. STIPA spp. Poaceæ.

56569. STIPA PUBESCENS R. Br.

A tufted perennial grass much relished by stock, found only in the wooded portions of Australia, where it seeds in October. The seed heads differ from those of other species of Stipa in being a rich brown.

56559 to 56570—Continued.

56570. STIPA SEMIBARBATA R. Br.

A perennial grass with stems 2 to 3 feet high, which is abundant in dry soil throughout Tasmania and also in many parts of Australia. The leaves are narrow, often almost subulate, and the panicles, 6 to 10 inches in length, are very dense.

56571 to 56576.

From Georges Bay, Tasmania. Seeds presented by Dr. Arthur H. Clarke. Received February 16, 1923. Quoted notes by Doctor Clarke, unless otherwise specified.

56571 to 56573. ACACIA spp. Mimosaceæ.

56571. ACACIA DISCOLOR Willd.

"An autumn flowering acacia 5 to 7 feet high."

A tall unarmed shrub or sometimes a small tree, with bipinnate leaves, pale beneath, and yellow flower heads in axillary and terminal clusters. It is native to southeastern Australia and Tasmania.

56572. ACACIA LONGIFOLIA SOPHORAE (Labill.) F. Muell.

"A yellow-flowered shrub 15 to 20 feet high."

A rapid-growing acacia which frequents the seacoast of southeastern Australia from southern Queensland to South Australia, and also in Tasmania. It often becomes a small tree and is excellent for preventing the encroachments of the sea along sandy coasts. The wood is white, hard, and durable.

56573. ACACIA MYRTIFOLIA Willd.

"A yellow-flowered shrub 2 to 3 feet high."

A glabrous shrub with very angular branches and phyllodia (leaflike stems) which vary in shape from oval to linear, the linear forms being much longer than the others. The flower heads, almost sessile, contain only a few large flowers. The shrub is native to dry and rocky places in many parts of Australia.

56574. EUCALYPTUS VIRGATA Sieber. Myrtaceæ.

"*Tasmanian ironbark.* A tree 150 feet tall, with very tough hard wood, excellent for making piles."

For previous introduction, see S. P. I. No. 38727.

56575. INDIGOFERA AUSTRALIS Willd. Fabaceæ. **Indigo**

An erect branching shrub 2 to 4 feet high with attractive compound leaves and dense or loose clusters of showy red flowers. It is very variable in regard to habit and foliage, and in its various forms is found almost throughout Australia, except in the Northern Territory.

For previous introduction, see S. P. I. No. 47152.

56576. KENNEDIA PROSTRATA R. Br. Fabaceæ.

"Creeping, about 2 feet long, with pink to scarlet flowers."

A prostrate or sometimes twining hairy perennial, with leaves composed of three roundish leaflets less than an inch long and scarlet flowers, usually solitary, nearly three-fourths of an inch long. Native to most parts of Australia.

56577 to 56590.

From the city of Guatemala, Guatemala. Seeds presented by Sr. Jorge Garcia Salas, Dirección General de Agricultura. Received February 19, 1923. Quoted notes by Señor Salas.

56577. MEIBOMIA sp. Fabaceæ.

"(No. 3.) *Lentaje crimmarona.* From Amatitlan."

56578 to 56588. PHASEOLUS spp. Fabaceæ.

56578 to 56581. PHASEOLUS LUNATUS L. **Lima bean.**

56578. "*Mexican pole Lima;* flat red snap beans."

56579. "*Cuban pole Lima;* flat white snap beans."

56580. "*Frijol pintado;* a pole Lima with speckled, flat snap beans."

56581. "(No. 4.) *Piligue;* from borders of cultivated fields near the city of Guatemala."

56582 to 56585. PHASEOLUS VULGARIS L. **Common bean.**

56582. "Originally from Mexico; a bush variety with light snap beans."

56583. "*Frijol de Mantua,* originally from Valencia, Spain. A bush form with red snap beans; can be used also as a green string bean."

56584. "*Alubia,* originally from Zamora, Spain. A bush form with white, longish rounded beans; can be used also as a string bean."

56585. "*Bahama* bean; a pole variety with white rounded snap beans."

56586. PHASEOLUS sp.

"*Chlorototo;* collected in the vicinity of Lake Amatitlan, Guatemala."

56587. PHASEOLUS sp.

"*Frijolillo.* Lake Amatitlan, Guatemala."

56588. PHASEOLUS sp.

"*Choreque.* San Andres Semetabaj, Solola, Guatemala.

56589 and 56590. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

56589. "*Frijol garbanzo.* A long-podded bush variety."

56590. "*Frijol de cosita.* A bush variety with long pods and black-eyed beans."

56591 to 56593.

From Bogota, Colombia. Seeds presented by Brother Ariste Joseph, Instituto de la Salle. Received February 19, 1923.

56591. SOLANUM sp.

"Cultivated in Bogota as an ornamental; the fruit is poisonous." (*Ariste.*)

56592 and 56593. TACSONIA spp. Passifloraceæ.

56592. TACSONIA LANATA Juss.

An evergreen climbing plant, native to Colombia. All parts of the plant are covered with a downy wool, and the narrowly heart-shaped leaves resemble those of the mullein. The long slender salmon-pink flowers are borne singly on short stems, and the fruit is said to be edible.

56591 to 56593—Continued.

56593. TACSONIA MOLLISSIMA H. B. K. **Curuba.**

"This species is more commonly cultivated on the mesa of Bogota than any of the several others whose fruits are also known as curuba. The vine is not quite so ornamental as that of some other species, but the fruit is considered one of the best. It is slender, oblong-oval, 2 to 4 inches long, and slightly more than an inch thick, with a thin leathery pericarp (not brittle as in most other species) inclosing many black seeds, each surrounded by an orange-colored juicy aril. The flavor is sprightly and aromatic. While much eaten out of hand, the fruit is perhaps best when prepared in the form of *creme de curuba* or when made into an ice. Certainly the curuba is one of the most popular fruits in Bogota." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 51399.

56594 and 56595.

From Santiago de las Vegas, Cuba. Seeds presented by Dr. Mario Calvino, Agricultural Experiment Station. Received January 30, 1923. Quoted notes by Doctor Calvino.

56594. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"*Frijol caballero perenne.* A climbing white variety perennial in Cuba; these seeds come from Oriente."

56595. VIGNA CYLINDRICA (Stickm.) Skeels. Fabaceæ. **Catjang.**

"*Frijol precioso.* From eastern Cuba."

Introduced in connection with disease-resistance experiments.

56596 to 56603.

From Tengyueh, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received February 16, 1923. Quoted notes by Mr. Rock.

56596. ALLIUM sp. Liliaceæ. **Onion.**

"*Tsung.* A variety resembling our small spring onion; it does not form a bulb."

56597 to 56599. BRASSICA spp. Brassicaceæ.

56597. BRASSICA sp.

"(No. 7814.) *Hsiao petsai* (small white cabbage). A stout lettuce-shaped cabbage with compact leaves, dark green above with a snow-white base, up to 4 inches broad, extending up into the dark-green leaf blades and forming prominent white ribs. The roots are short and stout."

56598. BRASSICA sp.

"(No. 7815.) *Ta petsai.* A large oblong cabbage, resembling the following [No. 7813; S. P. I. No. 56599]. The very large oblong leaves are pale green, and the broad base and midribs are snow white. This is a succulent vegetable, cooked like cabbage."

56599. BRASSICA sp.

"(No. 7813.) *Tsin tsai* (green cabbage). A green cabbage with leaves 2 feet or more in length and a foot broad, green throughout, including the thick sessile base. The root is turnip shaped but divided. This variety is cooked like cabbage."

56600. CORIANDRUM SATIVUM L. Apiaceæ. **Coriander.**

"(No. 7818.) *Yen sui.* This plant has an obnoxious odor, but is used in the same manner as European parsley."

56596 to 56603—Continued.

56601. LACTUCA SATIVA L. Cichoriaceæ. **Lettuce.**

"(No. 7817.) *Oh soon.* A peculiar vegetable of which the thick inner stalk is eaten; this stalk is about 2½ feet long and 2 inches in diameter, and it is cut into slices and boiled. The leaves are discarded, as they are bitter."

56602. RAPHANUS SATIVUS L. Brassicaceæ. **Radish.**

"(No. 7816.) *Water radish.* A large snow-white oblong radish 3 feet long and 5 inches thick, cooked like kohl-rabi."

56603. SPINACIA OLERACEA L. Chenopodiaceæ. **Spinach.**

"(No. 7812.) *Po tsai.* The dull-green leaves are lyrate sinuate, with sharp-pointed tips and lobes and long-ribbed fleshy stems. The roots are turnip shaped. The leaves are cooked like spinach. The seeds are sown in seed beds and set out in October or a little earlier and are brought to the market in December."

56604. STACHYS SIEBOLDI Miquel. Menthaceæ.

From Tengyueh, Yunnan, China. Tubers collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received February 16, 1923.

"*Yee huai.* Small tubers spirally twisted like snails, about 2 inches long, tapering at both ends. When boiled for a half hour or an hour, seasoned, and placed in butter and milk, these are delicious."

56605. ZEA MAYS L. Poaceæ. **Corn.**

From Buitenzorg, Java. Seeds presented by Dr. P. J. S. Cramer, director, General Experiment Station. Received February 14, 1923.

"*White St. Croix maïs* (white St. Croix corn). In 1918 this corn was imported from St. Croix, Virgin Islands, and it is one of the two imported varieties which have done well in Java. St. Croix is a dent corn, growing to 6 or 8 feet, with a very strong coarse stem. Each plant produces normally one large ear and no nubbins. The variety is medium maturing (about 100 days in Java) and yields about the same as *Gele Menado maïs* [S. P. I. No. 56663]. The grain is not as popular as that of flint-corn varieties, as it can not be pounded like these. For the feeding of cattle I think it to be of the same value as *Madoera maïs* [S. P. I. No. 56662] and *Gele Menado maïs.*" (*L. Koch.*)

56606 and 56607. MALUS SYLVESTRIS Mill. Malaceæ. (*Pyrus malus* L.) **Apple.**

From Orleans, Loiret, France. Plants presented by Edmond Versin, St. Jean le Blanc. Received February 26, 1923. Quoted notes by Mr. Versin.

56606. "*Court pendu.* The tree is prolific, but not very vigorous. The fruits are greenish gray, becoming yellow at maturity, and marked with red. They are of good quality and will keep from November to March."

56607. "*Reinette de Canada gris.* The tree is vigorous and very prolific, and the flowering season medium. The fruits are large, of a tarnished green which becomes a gray russet, and of very good quality. They will keep from December to March."

56608. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. **Yang-tao.**

From Chengtu, Szechwan, China. Seeds presented by George B. Newman, West China Union University, at the request of B. F. Lawrence, West China Mission, Suining, Szechwan. Received February 23, 1923.

"These 'hairy pears' came from the high foothills, at altitudes of 4,000 to 8,000 feet, near Chengtu, Szechwan." (*Lawrence.*)

"The *yang-tao,* an ornamental deciduous climber native to Szechwan, has attracted considerable attention because of the high quality of its fruits. The leaves have a plushlike texture and an unusual dark-green color, and their large size and regular spacing add to the beauty of the vine. The flowers are buff yellow to white, fragrant, often 1½ inches across, and are produced in great abundance. The ovoid to globose, russet-brown villous fruits are about 2 inches long. The flesh is green, of most excellent flavor, resembling that of a gooseberry but tempered with a flavor peculiarly its own. The fruit is good when eaten fresh and also makes very fine jam and sauce." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 55840.

56609 and 56610. HORDEUM spp. Poaceæ. **Barley.**

From Ayr, Scotland. Seeds presented by McGill & Smith. Received February 24, 1923. Quoted notes by McGill & Smith.

56609. HORDEUM DISTICHON PALMELLA Harlan.

"Recent trials of our new barley Golden Pheasant show that it is a better yielder than Plumage Archer, and we think it should be well adapted for the United States, as it is hardy and tillers well. It is a cross between Goldthorpe, one of the best British brewers' varieties, with Pfauen, the best brewers' variety in Germany. It is a big yielder."

56610. HORDEUM INTERMEDIUM HAXTONI Koern.

"Our 6-rowed barley is still in the experimental stage. It will probably never be anything but a feeding barley because of the amount of small seeds. The center rows are small twisted seeds, while the two side rows are equal to any other variety; the small seeds could be used for sowing. This variety was produced by crossing two 2-rowed barleys."

56611 to 56614.

From Nioka, Ituri, Belgian Congo. Seeds presented by Jean Claessens, Ferme Experimentale du Haute Ituri. Received February 26, 1923. Quoted notes by Mr. Claessens.

56611. AMARANTHUS CAUDATUS L. Amaranthaceæ.

"*Lenga-lenga,* an interesting plant from which the natives prepare a flour which is made into dough and cooked. The plants become 70 or 80 centimeters high, with a rather open habit, and the fruiting panicles are red, yellowish, or yellowish with reddish striae."

56612 and 56613. HOLCUS SORGHUM L. Poaceæ. (*Sorghum vulgare* Pers.) **Sorghum.**

56612. "(October, 1922.) A variety grown by the Bolos, but not by the Walendi."

56613. "(October, 1922.) A variety grown by the Walendi, probably a mixture."

56614. NICOTIANA RUSTICA L. Solanaceæ. **Tobacco.**

"(October, 1922.) A yellow-flowered tobacco grown by the natives of Haute Ituri and eastern Uele. This tobacco is very strong and aromatic and very popular with the natives. The plant becomes 60 or 70 centimeters in height."

56615. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Paris, France. Seeds purchased from Messrs. Vilmorin-Andrieux & Co. Received February 26, 1923.

"This has been grown near Epinal, Vosges, France, for four or five generations." (*Vilmorin-Andrieux & Co.*)

Introduced for timothy-breeding investigations.

56616. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Padua, Italy. Seeds purchased from Nicola Gribaldo, Padua, through Asher Hobson, American representative, International Institute of Agriculture, Rome. Received February 26, 1923.

Locally grown seed from the Province of Padua, Italy, introduced for cultural and comparison tests.

56617 to 56628. SACCHARUM OFFICINARUM L. Poaceæ. **Sugarcane.**

From Soledad, Cienfuegos, Cuba. Seeds presented by R. M. Grey, superintendent, Cuban Gardens. Received February 13, 1923.

"Seeds selected from our best varieties. The plants from which the seeds were taken are highly resistant to mosaic disease." (*Grey.*)

56617.	A. H. 175.	56623.	A. H. 9172.
56618.	A. H. 247.	56624.	A. H. 11,152.
56619.	A. H. 4124.	56625.	A. H. 12,096.
56620.	A. H. 6301.	56626.	A. H. 12,100.
56621.	A. H. 6304.	56627.	A. H. 13,024.
56622.	A. H. 6307.	56628.	A. H. 13,168.

56629 and 56630.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received February 26, 1923.

56629. GLADIOLUS SEGETUM Ker. Iridaceæ.

"One of the most beautiful wild flowers around here. It might be very valuable for hybridizing." (*Proschowsky.*)

A European gladiolus of free habit, fond of warm, dry soil and a sunny situation, with rather small rose-purple flowers. It is an admirable species for mixed borders. (Adapted from *Robinson, English Flower Garden, p. 577.*)

For previous introduction, see S. P. I. No. 51146.

56630. TRIFOLIUM ALEXANDRINUM L. Fabaceæ. **Berseem.**

Introduced for department specialists engaged in clover-breeding investigations.

56 31 FICUS CARICA L. Moraceæ. **Fig.**

From Saonara, Padova, Italy. Cuttings purchased from Fratelli Sgaravatti. Received March 31, 1923.

Dottato. The best-kn wn g i Tuscany, Italy, and the variety which cons itutes the largest part of the dried figs exported from Italy. The tree loves rich, moist soils and is not suitable for dry lands; it is a strong grower and heavy bearer. The medium-sized fruits, ab ut 3 inches long, are oval-pyriform, with smooth, thin, yellowish green amber skin. (Adapted from *Gustav Eisen, The Fig, p. 229.*)

This well-known Italian variety is introduced or cultural and comparison tests by department pecialists engaged in fig-breeding experiments.

56632. SACCHARUM OFFICINARUM L. Poaceæ. **Sugarcane.**

From Coimbatore, India. Seeds presented by T. S. Venkatraman, Government sugarcane expert, the Agricultural College. Received February 6, 1923.

"These seeds are from cane of a rather thin type, but which should prove resistant to mosaic disease." (*Venkatraman.*)

56633 and 56634.

From Upper Chindwin, northwestern Burma. Seeds collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received February 28, 1923. Quoted notes by J. F. Rock.

56633. TARAKTOGENOS KURZII King. Flacourtiaceæ.

"(January 8, 1923.) Collected near the jungle village of Kyokta, Upper Chindwin. These seeds are from the same forest as those sent in 1921."

For previous introduction, see S. P. I. No. 52803.

56634. ZIZIPHUS sp. Rhamnaceæ.

"(January 6, 1923.) A tree 40 feet high, with a stout trunk 1½ feet in diameter, found in a very dry region on the Mytha River near Kalewa, Upper Chindwin. The very small round leaves are less than an inch wide and the small globose, yellowish red drupes, less than an inch in diameter, have large stones and very scanty flesh."

56635. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Budapest, Hungary. Seeds purchased from the Hungarian Seed Culture Co. Received March 1, 1923.

Introduced for department specialists engaged in clover-breeding investigations.

56636 and 56637.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received March 3, 1923. Quoted notes by Mr. Rock.

56636. ALNUS NEPALENSIS D. Don. Betulaceæ. **Alder**

"(No. 6858. September 27, 1922.) A tree up to 70 feet in height, with a trunk 3 to 4 feet in diameter, which is very common all over Yunnan at altitudes of 4,000 to 7,000 feet. It is a rapid grower, used chiefly for firewood, and appears to thrive in spite of the tall grass, 5 to 8 feet high, which surrounds it. I would recommend it strongly for planting in grassland where trees can not usually be grown."

For previous introduction, see S. P. I. No. 55670.

56637. BUCKLANDIA POPULNEA R. Br. Hamamelidaceæ.

"(Nos. 7574, 7575. November 21, 1922.) A tall straight tree 60 to 80 feet in height, of fine appearance, found near Kaotien, one day's journey north of Tengyueh, at an altitude of 6,000 feet. The broadly triangular leaves are dark green, and the yellow male flowers are in globose heads. This should be an ornamental lawn tree."

For previous introduction, see S. P. I. No. 55674.

56638. BROMUS UNIOLOIDES (Willd.) H. B. K. Poaceæ. **Grass.**

From Auckland, New Zealand. Seeds presented by W. S. Hill, agricultural instructor, Seddon Memorial Technical College. Received March 1, 1923.

"*Giant bromegrass.* I made this selection at the Moumahaki Experimental Farm in 1913, and during the six generations through which it has passed it has exhibited the characters of a pure line. It has proved superior to the commercial prairie grass (*Bromus unioloides*) in yield and resistance to smut. The seed is heavier and retains its vitality well. The strain is likely to prove of great value as pasturage in regions of mild winters and on the lighter soils. The bulk of the growing from early autumn sowing is made during the winter and early spring." (*Hill.*)

56639 to 56647. ZEA MAYS L. Poaceæ. **Corn.**

From Johannesburg, Transvaal. Seeds presented by P. J. Stevenson, trade commissioner. Received March 5, 1923. Quoted notes by Mr. Stevenson.

Nine varieties of corn sent in from South Africa for testing in this country.

56639. "*Ten-row Yellow Flint.* Grown by G. Mitchell-Innes, Blanerne, Elandslaagte, Natal."

56640. "*Hickory King.* Grown by Hubert v. d. Merve, Smithfield, Potchefstroom, Transvaal."

56641. "*Iowa Silver Mine.* Grown by C. Mottram, Bushybend, Machavie, Transvaal."

56642. "*Ladysmith.* Grown by J. Meiklejohn, Rosyth, Private Bag, Pienaars River, Transvaal."

56643. "*Natal 8-row Flint.* Grown by G. Mylrea, Reismierbult, Transvaal."

56644. "*Palins Cornflake.* Grown by P. Erasmus, Avondale, Potchefstroom, Transvaal."

56645. "*Potchefstroom Pearl.* Grown by George Parks, Machavie, Transvaal."

56646. "*Reid Yellow Dent.* Grown by E. Papendorp, Reismierbult Station, Transvaal."

56647. "*Salisbury.* Grown by W. Bean, Shamva, Rhodesia."

56648 to 56659. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

From Rio de Janeiro, Brazil. Plants presented by P. H. Rolfs, Vicosa, Minas Geraes, through Crittenden Marriott, Bureau of the Public Health Service, Treasury Department. Received January 27, 1923. Quoted notes by Mr. Rolfs, unless otherwise specified.

"As a general rule the mangos of Brazil are not of good quality when compared with those of India, the Philippines, and several other regions. Most of them are decidedly fibrous, and few have as rich a flavor as such Indian varieties as Amini, Mulgoba, and Paheri. Some of them are resistant to anthracnose, however, and for this reason are worthy of trial in Florida and the West Indies." (*Wilson Popenoe.*)

56648. "No. 12. *Augusta.* A small mango, but one of the few varieties propagated in Brazil by inarching or grafting. As seen growing in the garden of Sr. Antonio Calmon do Pin e Almeida on Itaparica Island near Bahia, it may be described as follows: General form obliquely oval; cross section oval, size small, length 2¾ inches, breadth 2½ inches, thickness 2 inches; stem inserted obliquely; base obliquely flattened, cavity practically none; dorsal shoulder rounded, low; ventral shoulder rounded, high; apex rounded, nak five-sixteenths of an inch from longitudinal apex, a slight depression; surface smooth, green-yellow, tinged and overspread with orange on cheek; dots numerous, subcutaneous, small, rounded, lighter in color than surface; skin thick, firm, and tough, adhering closely; flesh pale orange, very juicy, aroma pleasant but not pronounced; flavor subacid; seed large for size of fruit, ovate-reniform, 2¼ by 2¼ by 1 inches, very fibrous over entire surface, monoembryonic; season December and January. For trial in the mango-growing regions of Florida." (*Dorsett, Shamel, and Popenoe.*)

For previous introduction, see S. P. I. No. 37848.

56649. "No. 11. *Carlota.* This has a better color than *Itamaraca* and is more resistant to anthracnose, but the most interesting thing about it is its tendency to produce sports."

For previous introduction, see S. P. I. No. 37847.

56650 and 56651. "The two following numbers are simply variants of what appear to be quite similar fruits; they are heavy croppers and precocious and are especially interesting because dwarf forms."

56650. No. 1. *Familia.*

56651. No. 2. *Familia.*

56652 to 56654. *Itamaraca* is probably the best variety of mango in the vicinity of Bahia, Brazil. It takes its name from the island of Itamaraca, off the Brazilian coast near Pernambuco, a place especially noted for its mangos. The fruit is small and of very unusual form, distinctly oblate, and commonly not more than 3 inches in diameter. The skin is yellow and the flesh rather free from fiber, with an aromatic, spicy flavor. (Adapted from *Bulletin No. 446, U. S. Dept. of Agr., p. 24.*)

56652. No. 3. *Itamaraca–A.*

56653. No. 4. *Itamaraca–B.*

56654. No. 5. *Itamaraca–B.*

56655. No. 6. *Itaparica.*

56656. No. 7. *Itaparica.*

56657. No. 8. *Julieta.*

56658. No. 10. *Julieta.*

56659. No. 9. *Melifera.*

56660. DIOSCOREA TRIFIDA L. f. Dioscoreaceæ. **Yampi.**

From Cristobal, Canal Zone. Tubers presented by James E. Lewis, manager, Hotel Washington, Cristobal. Received March 9, 1923.

"This yampi is usually of even form and somewhat club shaped, and the tubers are commonly 4 to 10 ounces in weight; the inner skin is pink. The flesh is white, but often becomes slightly grayish when cooked. The flavor is much like that of the white potato, but the yampi has in addition an agreeable sweetness." (*R. A. Young.*)

56661. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Italy. Seeds purchased from Girardino Allegra, Catania, Sicily, through Asher Hobson, American representative, International Institute of Agriculture, Rome. Received March 12, 1923.

A strain of locally grown red clover from Sicily, introduced for department specialists.

56662 and 56663. ZEA MAYS L. Poaceæ. **Corn.**

From Buitenzorg, Java. Seeds presented by Dr. P. J. S. Cramer, director, General Experiment Station. Received January 31, 1923. Quoted notes by L. Koch.

56662. "*Madoera maïs* (Madura corn). Madura corn was obtained from the island of Madura. This is an early variety, maturing in Java in from 75 to 85 days. The plants remain low (under 6 feet) and produce as a rule not more than one ear. The variety is less susceptible to diseases and drought than others, this being one of the principal reasons for its culture. The yield is usually less than that of Yellow Menado, but under good conditions 50 and more bushels to the acre have been harvested. The grain is very popular with the Madurese, who eat it pounded as rice."

56663. "*Gele Menado maïs* (Yellow Menado corn). This variety was received from the northern Moluccas, where it is planted extensively by the natives. It resembles very closely the Nation Yellow Flint from the Philippines and I presume that both varieties are the same. *Yellow Menado* is a flint variety of late maturity; it ripens at Buitenzorg in 115 to 120 days, growing to a height of 8 to 11 feet. It is prolific, 100 plants producing 150 to 180 ears, the percentage of sterile plants usually being low. At Buitenzorg, where the climate is not favorable for corn plantings, the average yield in the dry season is about 28 bushels per acre; in the wet season, however, it is much less. Under good conditions, such as after a green-manure crop, much higher yields have been reported (60 to 70 bushels per acre). The grain is of good taste and is very much favored by the natives."

56664 and 56665. DAHLIA MAXONII Safford. Asteraceæ. **Dahlia.**

From Chimaltenango, Guatemala. Seeds presented by W. Cameron Townsend. Received March 12, 1923. Quoted notes by Mr. Townsend.

56664. "I think these seeds are of the 'White dahlia'; they were taken from plants cultivated in Chimaltenango."

56665. The wild tree dahlia of the Guatemalan highlands blooms in its native land in the months of December and January, and its starry lilac-pink flowers in graceful clusters on long stems make a very agreeable contrast with the dark-green hillsides. This beautiful plant is extremely abundant, both wild and cultivated, in many parts of the Guatemalan highlands at altitudes of 3,000 to 7,000 feet. The stems sometimes reach 15 or even 18 feet in height and become quite woody toward the base. The slender branches bear the clusters of nodding flowers, some of which measure 4 or 5 inches across. When brought into cultivation around the huts of the natives the species seems to lose its stability, and in place of the single lilac-pink flowers appear double pink and double white forms and, less commonly, single white varieties. This dahlia is subtropical in its requirements and should succeed in southern Florida, provided suitable soil conditions are found. (Adapted from *Journal of Heredity, vol. 11, pp. 265–268.*)

56666. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung-oil tree.**

From Hongkong, China. Seeds presented by H. Green, superintendent, Botanical and Forestry Department. Received March 12, 1923.

"A rapid-growing broad-leaved deciduous tree which attains a height of 25 to 35 feet. It is said to be comparatively short-lived. Clusters of pinkish white flowers are produced just as the leaves begin to come out in the spring, followed by green or reddish fruits somewhat larger than those of the black walnut. The fruits contain the large nutlike oily seeds from which tung oil, a valuable drying oil, is expressed. The oil constitutes about 24 per cent (by weight) of the seeds, or about 40 per cent of the kernels from which the shells have been removed. The tree appears to be particularly well adapted to the sandy clay soils and the climate of northwestern Florida and the adjacent regions of Alabama and Georgia." (*R. A. Young.*)

For previous introduction, see S. P. I. No. 50635.

56667. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Kingston, Jamaica. Seeds presented by W. S. Goodman, acting superintendent, Hope Gardens. Received March 12, 1923.

Mangosteen seeds introduced from Jamaica for testing in our tropical dependencies.

For previous introduction, see S. P. I. No. 56070.

56668 to 56675.

From New England. Seeds presented by Dr A. H. Hill, director, Royal Botanic Gardens. Received March 12, 1923.

Introduced for the use of specialists in the department engaged in forage-crop investigations.

56668 to 56670. LOTUS spp. Fabaceæ.

56668. LOTUS EDULIS L.

A more or less hairy annual with ascending or erect branched stems 4 to 16 inches long, short-stemmed grayish green leaflets, and large yellow flowers in few-flowered heads. The plant grows only in sandy areas in the Mediterranean region.

For previous introduction, see S. P. I. No. 51861.

56669. LOTUS REQUIENI Mauri.

A hairy ascending or erect plant with stems about a foot long, native to the vicinity of Rome, Italy. The leaflets are rhombic in shape and sharp pointed, and the flowers are small and red.

56670. LOTUS TETRAGONOLOBUS L.

A purple-flowered annual from the eastern Mediterranean countries, where it frequents the edges of cultivated fields, roadsides, etc. It is more or less hairy, with obovate leaflets. The edible seeds are sometimes used as a substitute for coffee, and the plant is often cultivated as an ornamental.

For previous introduction, see S. P. I. No. 38415.

56671 to 56675. TRIFOLIUM spp. Fabaceæ. **Clover.**

56671. TRIFOLIUM ALPESTRE L.

A perennial clover with long underground roots, found over almost all the mountainous parts of Europe, especially in calcareous soils, and ascending to a height of 16,000 feet. The narrowly oval leaflets are velvety hairy, and the flowers are pinkish purple.

For previous introduction, see S. P. I. No. 35276.

56672. TRIFOLIUM ELEGANS Savi.

A smooth perennial clover with stems 8 to 20 inches long, found throughout Europe and the Caucasus, especially in siliceous soils. The flowers are whitish or pink. The plant is cultivated for forage.

For previous introduction, see S. P. I. No. 35275.

56668 to 56675—Continued.

56673. TRIFOLIUM OCHROLEUCON Huds.

A perennial clover with brown underground stems, which grows wild in western, central, and southern Europe. The flowers are yellowish. The plant multiplies by means of buds produced on the underground stems.

For previous introduction, see S. P. I. No. 25387.

56674. TRIFOLIUM PANNONICUM Jacq.

A clover with stems up to 10 inches long and yellowish flowers, found on the high mountains of southeastern France. It is considered by some authorities to be merely a race of red clover.

For previous introduction, see S. P. I. No. 28312.

56675. TRIFOLIUM PHYSODES Stev.

A perennial prostrate clover with oval leaflets and roundish heads of pink flowers which open in July and August. Native to southeastern Europe. In the flowering stage this species resembles white clover, but it does not creep.

56676. ALEURITES MONTANA (Lour.) Wilson. Euphorbiaceæ. **Mu-oil tree.**

From Hongkong, China. Seeds presented by H. Green, superintendent, Botanical and Forestry Department. Received March 17, 1923.

Aleurites montana yields an oil from the seeds practically identical with that from *A. fordii*, the tung-oil tree of China. While the seeds of the two species are almost indistinguishable, the fruits are easily recognized by their exteriors; those of the former are prominently ridged, while those of the latter are smooth.

56677. CASTANOPSIS DELAVAYI Franch. Fagaceæ. **Chestnut.**

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received March 9, 1923.

"(No. 7742. December 1, 1922.) A tree 60 to 100 feet tall, with trunk 4 to 5 feet in diameter, which grows on the summit of the Salwin Ridge. The leaves are large, broadly ovate, coarsely serrate, glossy above and silvery beneath. The burs are in spikes, and the nuts are small, something like those of the chinquapin, and very sweet and palatable. This is identical with the chestnut sent from the Talifu-Yangpi Trail, No. 6682 [S. P. I. No. 56080]."

56678. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Bogota, Colombia. Tubers presented by Brother Ariste Joseph. Received February 26, 1923.

"These potatoes are from the Paramos de Guasca, where this curious variety is grown by the ancient tribe known as the Chibchas." (*Ariste.*)

56679 to 56683. TRIFOLIUM spp. Fabaceæ.

From Reading, England. Seeds purchased from Sutton & Sons. Received March 20, 1923. Quoted notes from Sutton's Farmers' Yearbook.

Introduced for the use of department specialists engaged in clover breeding.

56679 and 56680. TRIFOLIUM INCARNATUM L. **Crimson clover.**

"These crimson clovers are used as catch crops. The seed is harrowed into the stubble as soon as the wheat crop is off, and sometimes it is sown in the spring."

56679. *Late red.* 56680. *Late white.*

56679 to 56683—Continued.

56681 to 56683. TRIFOLIUM PRATENSE L. **Red clover.**

56681. "*Red* or *broad clover.* An indigenous strain used for fodder."

56682. "*Sutton's cow grass* or *late-flowering red clover.* A most valuable strain where ordinary red clover is unsuitable."

56683. "*Sutton's Giant Hybrid cow clover.* Produces a greater quantity per acre than any other clover, giving two and sometimes three cuttings a year. Duration two or three years."

56684. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Italy. Seeds purchased from Consorzio Agrario Cooperativo Canavesano, Ivrea, through Asher Hobson, American representative, International Institute of Agriculture, Rome. Received March 12, 1923.

A strain of locally grown red clover from Sicily introduced for specialists in the Department of Agriculture.

56685 and 56686. PHASEOLUS spp. Fabaceæ.

From Chicacao, Guatemala. Seeds presented by Jorge G. Salas, Director General of Agriculture. Received March 20, 1923. Quoted notes by Señor Salas.

"From Chicacao, Solola; altitude 1,300 feet."

56685. PHASEOLUS ADENANTHUS G. Meyer.

"*Frijol de animal.*"

56686. PHASEOLUS sp.

"*Frijol de monte.*"

56687 and 56688. PYRUS CALLERYANA Decaisne. Malaceæ. **Pear.**

From Nanking, China. Seeds purchased from J. Lossing Buck, acting dean, College of Agriculture. Received March 22, 1923.

Introduced for the use of department specialists engaged in pear-breeding investigations.

56687. From Hunan.

56688. From Kuling, Kiangsi.

56689 to 56692.

From Bedford, England. Plants presented by Laxton Bros. Received March 26, 1923. Quoted notes from catalogue of Laxton Bros.

56689 and 56690. PYRUS spp. Malaceæ. **Pear.**

56689. PYRUS sp.

"*Superb.* A hybrid between *Beurre Superfin* and *Williams.* A very early dessert pear of fine flavor, partaking of the good qualities of both its parents, but ripening earlier than *Williams.*"

56690. PYRUS sp.

"*Beurre Bedford.* A hybrid between *Marie Louise* and *Durondeau.* The fruit, which is as large as *Marie Louise*, and borne as freely as *Conference*, is pear shaped, tapering at the end with a long stalk. The skin is yellow, marked with russet brown and crimson, and the juicy melting flesh is of very fine flavor. This is superior to any other October pear and a very heavy cropper."

56691 and 56692. RUBUS spp. Rosaceæ.

56689 to 56692—Continued.

56691. RUBUS sp. **Dewberry.**

"*Newberry.* This is similar to the Logan blackberry, but darker and sweeter."

56692. RUBUS sp. **Blackberry.**

"*Pollards.* A blackberry which ripens later than *Edward Langley*, but is a strong grower and better adapted to exposed situations. The fruit clusters are very large, and the berries are rich in flavor and very juicy. This variety is strongly recommended for making jelly and jam."

56693 to 56696.

From Elstree, Herts, England. Plants presented by Hon. Vicary Gibbs, Aldenham House Gardens. Received March 26, 1923. Quoted notes by Edwin Beckett, superintendent.

56693. MALUS SYLVESTRIS Mill. Malaceæ. (*Pyrus malus* L.) **Apple.**

Variety *Aldenhamensis.* "This is a chance hybrid which occurred at Aldenham and is considered the finest of all red-flowered crab apples. It flowers three weeks later than *Malus niedzwetzkyana* and *M. purpurea* and, unlike the former, bears in autumn a large number of large dark-red fruits."

56694. PYRACANTHA GIBBSII A. Jackson. Malaceæ. **Firethorn.**

A fine ornamental evergreen bush, vigorous and hardy, native to Hupeh and Szechwan, China. It becomes 12 to 14 feet high, is nearly spineless, and in the autumn bears large clusters of scarlet berries which contrast admirably with the glossy dark-green foliage.

For previous introduction, see S. P. I. No. 56451.

56695 and 56696. STRANVAESIA DAVIDIANA Decaisne. Malaceæ.

56695. "This may be trained as a small standard tree, otherwise of bush form. The foliage is evergreen, and the terminal corymbs of white flowers are soon followed by the handsome bunches of scarlet fruits."

56696. "This yellow-fruited form was raised from the same batch of seeds as the preceding [S. P. I. No. 56695], but the fruits were found to have a distinct orange-yellow color. Seedlings of this may revert to the original type."

56697. PHALARIS BRACHYSTACHYS Link. Poaceæ. **Grass.**

From Milan, Italy. Seeds presented by Fratelli Ingegnoli. Received March 12, 1923.

Introduced for specialists in the department engaged in forage-crop investigations.

An annual grass a foot or two in height, native to the Mediterranean coastal regions. It is closely related to canary grass (*Phalaris canariensis*).

56698 and 56699. GARCINIA spp. Clusiaceæ.

From Brisbane, Queensland. Seeds presented by C. T. White, Government botanist. Received March 26, 1923.

56698. GARCINIA GIBBSIAE S. Moore.

A wild relative of the mangosteen which grows in forests in the Bellenden Ker Hills, at an altitude of about 2,000 feet. The leaflets are oval with mucronate tips, and the flowers, in clusters of two or three, are green, later

56698 and 56699—Continued.

turning brown. The fruit is not known. (Adapted from *Journal of Botany, vol. 55, pp. 298, 302.*)

56699. GARCINIA MESTONI F. M. Bailey. **Meston's garcinia.**

An erect, slender, graceful tree 20 feet or more in height, with drooping branches and glossy dark-green leaves. The roundish fruits, 2 or 3 inches in diameter, are of a bright-olive green, with very juicy pulp of a pleasant acid flavor. The tree grows wild in the Belienden Ker Hills at an altitude of about 2,000 feet. (Adapted from *Report of the Government Expedition to Bellenden Ker Range, Queensland, 1889, p. 31.*)

For previous introduction, see S. P. I. No. 41802.

56700. EREMOCITRUS GLAUCA (Lindl.) Swingle. Rutaceæ.

(*Atlantia glauca* Benth.)

Australian desert kumquat.

From Dundas, New South Wales. Seeds presented by Herbert J. Rumsey. Received March 28, 1923.

"This is one of the most interesting of all citrus fruits and one which, curiously enough, has never yet received adequate attention from botanists or horticulturists. It was first mentioned by Leichhardt, the German explorer, to whom we owe much of our knowledge concerning the interior of the deserts of northeastern Australia. It is a shrub or small tree from 12 to 15 feet high, with a trunk 2 to 6 inches in diameter. It has small but thick leathery leaves of gray-green, and one is struck by the scantiness of the foliage. The flowers are small and the fruits about a half inch in diameter. An agreeable beverage is made from the acid juice and a fair preserve may be made out of the fruit. The peel has the sweetish flavor of the kumquat. It is known in Australia as the native lemon. The plant was described botanically in a footnote to Lieut. Col. Thomas Livingston Mitchell's 'Journal of an Expedition into the Interior of Tropical Australia in Search of a Route from Sydney to the Gulf of Carpentaria.' This plant was discovered on October 17, 1846, not far from Lieutenant Colonel Mitchell's camp, near the junction of the Maranoa and Merivale Rivers, in the southern limit of Queensland, latitude 26° S. Decidedly cold weather was encountered near this point, in some cases the ice being so thick that it had to be broken in the morning before the horses could drink. It seems quite probable from this that the plant grows in a region where the temperature occasionally falls to 10° F. and in rare cases nearly to zero. It is the hardiest of all evergreen citrus fruits and is very promising for use in breeding new and hardy types." (*W. T. Swingle.*)

For previous introduction, see S. P. I. No. 29537.

56701 to 56709. ZEA MAYS L. Poaceæ. **Corn.**

From Sapporo, Japan. Seeds presented by M. Akemine, professor of plant breeding, Hokkaido Imperial University. Received March 21, 1923. Quoted notes by Professor Akemine.

Seeds introduced from the chief corn-producing regions of Japan and China, for the use of department specialists engaged in corn breeding.

56701. "A local yellow flint variety from Chosen."

56702 and 56703. "From Ehime."

56702. "A local white flint variety."

56703. "A local yellow flint variety."

56704. "A local yellow flint variety from Kumamoto."

56701 to 56709—Continued.

56705 to 56707. "From Manchuria, China."

56705. "A local white flint variety."

56706. "*Lao-lai-tsou* (white dent)."

56707. "*Ma-ya-tsou* (red dent)."

56708 and 56709. "From Sapporo."

56708. "*Longfellow* (imported from the United States about 35 years ago)."

56709. "*Stephens Waushacum* (imported from the United States about 25 years ago)."

56710 to 56745. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ.

Sweet potato.

From St. Croix, Virgin Islands. Tubers presented by J. B. Thompson, agronomist in charge, Agricultural Experiment Station. Received March 22, 1923. Quoted notes by Mr. Thompson.

"All these seedlings were grown from seeds at this station during February, March, and April, 1922. The seeds were collected from plantings of the Big Wig, Key West 'yam,' and Black Rock varieties grown close together, and it is believed they may have been cross pollinated. We believe that there are good possibilities even from these seedlings which are most unpromising."

56710. "No. 2. A Big Wig seedling. Vines in nursery row 18 to 24 inches long, medium in thickness, green with red coloring at juncture with petiole. Leaf large, cordate, resembling that of Black Rock; red midribs and green veins. Tubers dark red. The original seedling plant yielded 5 tubers weighing 6 pounds 6 ounces. Flesh yellow, mottled with red."

56711. "No. 3. A Big Wig seedling. In the nursery row the vine growth was 2 to 4 feet in length, medium in diameter, green with red at juncture of petiole, and hairy. Leaf 3 parted, midrib and veins red, leaf growth dense. The tubers are red and the first or original seedling yielded 7 tubers weighing 1 pound 1 ounce. The color of the flesh is a rich yellow."

56712. "No. 4. A Big Wig seedling. Plants in the nursery row were 5 to 8 feet long, completely covering the soil. The stems were rather slender, green with red coloring at juncture of petiole. The leaves were numerous, 3 parted with red midribs. The tubers are coppery red, the flesh yellow, occasionally mottled with red. The original seedling bore 7 tubers weighing 2 pounds 8 ounces."

56713. "No. 5. A Big Wig seedling. The vines were 2 to 4 feet in length in the nursery row. The leaves were cordate and resembled those of Black Rock rather than those of Big Wig, and the seedling is probably a cross between these two varieties. The petioles, midribs, and veins are red and the tubers are a peculiar light red. The flesh is white, mottled with red. The original seedling plant yielded 12 tubers weighing 6 pounds 4 ounces."

56714. "No. 7. A Big Wig seedling. This seedling is as yet untested. The very leafy vine, 3 to 4 feet long, covers the ground completely. The leaves are dark green, broadly shouldered and lanceolate. The roots are red, flesh white. Although not thoroughly tested this is not regarded as a promising seedling."

56715. "No. 14. A Big Wig seedling. The vines in the nursery row were 2½ to 4 feet in length, numerous, green and leafy. Leaves numerous, making a dense growth and affording a perfect covering for the hill, broad, 3 parted, with long green petioles. The midribs and veins are green, but the tubers are red. The original seedling yielded 4 tubers weighing only 12 ounces. Flesh pale yellow, almost white."

56710 to 56745—Continued.

56716. "No. 15. A Big Wig seedling. A rampant grower, vines 2 to 3 feet long, numerous, stout, chocolate colored, hairy. Leaves large, broad, pointed, very dark green, petioles green tinged with red, 10 to 12 inches long on old growth, midribs and veins red. Tubers dark red, flesh pale yellow. Original seedling yielded 2 tubers weighing 8 ounces."

56717. "No. 18. A Big Wig seedling. A rampant grower, the vines reaching out 8 or 10 feet on each side of the nursery row. This variety flowers profusely. Tubers red, flesh pale yellow. Not considered very promising."

56718. "No. 19. A Big Wig seedling. Vines in nursery row 18 to 24 inches long, bearing a dense growth of finely cut leaves. Leaves deeply cut and lobed, 5 parted, midribs red, veins green to wine colored. The tubers are dark red and the flesh a golden yellow sometimes mottled with red. Original seedling plant had no tubers."

56719. "No. 20. A Big Wig seedling. In the nursery row the stems were from 2 to 4 feet long and numerous. The leaves were numerous, dark green, with red midribs and veins. The original seedling plant yielded 6 tubers weighing 10 ounces. The tubers are a dark red with pale-yellow flesh sometimes mottled with a little red."

56720. "No. 22. A Big Wig seedling. In the nursery row the vines were slender, 2 to 4 feet in length and moderately leafy. Leaves broad, relatively short, pointed, 3 parted, midribs and veins green. Flesh of tubers deep yellow. The original seedling plant bore 12 tubers weighing 3 pounds."

56721. "No. 24. A Big Wig seedling. In the nursery row this vine was medium stout, 3 to 4 feet in length, leaves medium size, dull green, 3 and 5 parted (usually 3 parted). The tubers are light red, irregular in form, and show a tendency to burst and split badly. The variety shows a tendency also to produce tubers at the joints where they root, even at a distance from the hill. The original seedling plant produced 33 tubers weighing 13 pounds 8 ounces and was the heaviest producing hill among all the original plants. The flesh is pale yellow."

56722. "No. 26. A Big Wig seedling. In the nursery row this seedling shows short vine growth with rather sparse foliage. The stems are short and stout, attaining a maximum length of 2 to 3 feet. The leaves are lanceolate with a wine-colored midrib. The tubers are dark red and grow at the ends of fleshy roots that are 12 to 18 inches long; flesh white. The tubers are traversed by a number of pronounced ribs or veins. The original seedling yielded 4 pounds of tubers under very adverse conditions."

56723. "No. 28. A Big Wig seedling. Stems rather slender, 2 to 3 feet in length, green and leafy. Leaves broad, 3 parted, midrib wine colored. Tubers long, white, smooth, and hanging on roots in a cluster around the main stem, flesh creamy yellow. The original seedling plant produced 13 tubers weighing a total of 3 pounds 4 ounces."

56724. "No. 29. A Big Wig seedling. Stems short, stout, leafy, covering the ridge well, but not having sufficient length to completely cover the full area between rows. Leaves large, broad, 5 parted, midribs and

56710 to 56745—Continued.

veins red. The original seedling plant bore 15 tubers weighing 4 pounds 7 ounces. The tubers are light red, short and thick, and the flesh is yellow."

56725. "No. 30. A Big Wig seedling. Vines 2 to 4 feet long and densely covered with leaves. Leaves large, cordate, and dark green. Tubers light red, flesh yellow. The original seedling plant bore 7 small tubers weighing a total of 12 ounces."

56726. "No. 31. A Big Wig seedling. In the nursery row the vines are strong but short and sparsely leaved. The leaves are small with five deeply cut lobes. This variety shows a tendency to produce tubers at the nodes of the vines where they attach themselves to the soil. The tubers are a light red or rose, flesh yellow. The original seedling yielded 38 tubers weighing 5 pounds 4 ounces."

56727. "No. 39. A Big Wig seedling. Vines short, stout, bunching, and bearing an abundance of foliage. Leaves medium in size, 3 and 5 parted, midribs and veins wine colored. The tubers are dark red, flesh creamy yellow. The original seedling plant bore 1 tuber weighing 3 ounces."

56728. "No. 40. A Big Wig seedling. The stems are stout and numerous and about 18 inches in length. Leaves dark green, cordate, attractive, midrib and veins red. The tubers are dark red, flesh pale yellow. The original seedling plant bore no tubers."

56729. "No. 55. A Black Rock seedling. The stems are 2 to 3 feet long in our nursery row. The leaves are somewhat variable in form but usually lancelike and bear some resemblance to those of the variety grown at this station under the name of the 'Key West yam.' The tubers are dark red and are borne on the ends of long fleshy roots; flesh rich yellow, also cooks yellow. The original seedling plant yielded 30 tubers weighing a total of 4 pounds 12 ounces."

56730. "No. 57. A Black Rock seedling. The stems are 2 to 5 feet in length, medium stout, and leafy. Leaves light green, large, broad, lanceolate, midribs wine colored, veins green. The tubers are light coppery red, smooth, and attractive. The flesh is a rich yellow. The original seedling plant bore 77 tubers weighing 8 pounds."

56731. "No. 58. A Black Rock seedling. The vine is 2 to 3 feet in length and very leafy. The leaves are cordate and rounded and the younger ones are wine colored, especially around the margins. The tubers are dark red, flesh yellow, mottled with red. The original seedling plant bore 37 tubers weighing 5 pounds

56732. "No. 73. A Big Wig seedling. Vines short, 1 to 2 feet long. Leaves broad and lobed, usually 5 parted, broad blade. The tubers are smooth and dark red, flesh yellow, often mottled with red. The original seedling hill bore 8 tubers weighing 1 pound 14 ounces.

56733. "No. 80. A Big Wig seedling. The vines are 2 to 3 feet in length and leafy. Leaves large, broad, 5 parted, dark green, midribs and veins amber. The tubers are white, flesh pale yellow, mottled with a little red. The original seedling plant bore 18 tubers weighing a total of 3 pounds 10 ounces.

56734. "No. 105. A Big Wig seedling. The vines are 5 feet or less in length and very leafy. Leaves large, deeply cut and lobed, the lobes narrow, midribs wine colored. Tubers light red and growing in clusters close to base of main plant. The original seedling plant bore 14 tubers having a total weight of 6 pounds 4 ounces. Tubers light red with pink underskin, flesh yellow."

56710 to 56745—Continued.

56735. "No. 110. A Big Wig seedling. The parent plant yielded 4 tubers weighing 5 ounces. Vines medium to long, reaching 3 to 5 feet or more from hills. Leaves not numerous, deeply cut and lobed, 5 parted, midribs and veins nearly green. The original seedling plant bore 11 tubers weighing 3 pounds 8 ounces. The tubers are smooth and light red, with pale-yellow flesh."

56736. "No. 142. A Big Wig seedling. Stems 1 to 3 feet long, green. Leaves small, green, cordate, midribs and veins green. The tubers have a smooth white exterior and yellow flesh."

56737. "No. 157. A Big Wig seedling. The parent plant bore 4 tubers weighing 12 ounces. The stems are short, bunching, and leafy. The leaves are 5 parted and have dark-red midribs and veins. The tubers are smooth and yellow, and the flesh is pale yellow or almost white with occasional faint red rings. The original seedling plant yielded 40 tubers weighing 5 pounds 1 ounce."

56738. "No. 195. A Black Rock seedling. The parent plant yielded 5 tubers weighing 12 ounces. Vines long, running to 6 feet or more from hill and covering the hill and interspaces well. Leaves medium in size, cordate to cordate-lanceolate in form, midribs green or amber, veins green. The original seedling plant bore 9 tubers weighing 4 pounds. The tubers were smooth and light red, the flesh a rich yellow."

56739. "No. 205. A Black Rock seedling the parent plant of which bore 5 tubers weighing 7 ounces. Vines 2 to 5 feet long, numerous and leafy. Leaves dark green, cordate, midribs wine colored. The original seedling plant bore 25 tubers weighing 5 pounds 4 ounces. The tubers are dark red with pale-yellow flesh."

56740. "No. 222. A Key West 'yam' seedling. The parent hill bore 2 tubers weighing 12 ounces. The vines are 2 to 4 feet in length, green. Leaves light green, midribs and veins green, cordate. The tubers are light rose, flesh yellow. The original seedling plant bore 26 tubers weighing 3 pounds 14 ounces."

56741. "No. 233. A Black Rock seedling. Tubers smooth, yellow; flesh yellow, sometimes mixed with a little red. Vines 2 to 3 feet long. Leaves cordate, midribs green. The original seedling plant produced 13 tubers weighing 6 pounds 2 ounces."

56742. "No. 240. A Black Rock seedling, not yet described. The original seedling plant yielded 26 smooth coppery red tubers with a total weight of 5 pounds 4 ounces; flesh yellow."

56743. "No. 251. A Black Rock seedling, not yet described. The original seedling plant produced 14 yellow tubers weighing 1 pound 11 ounces; flesh yellow."

56744. "No. 259. A Big Wig seedling. The parent hill yielded 5 tubers weighing 8 ounces. Vines short, bunching, about 2 feet long. Leaves small to medium in size, comparatively long, 3 to 5 parted. The original hill yielded 10 tubers weighing 3 pounds 8 ounces. The tubers are dark red and the flesh yellow."

56745. "No. 275. The parentage of this number is unknown. The original seedling plant bore 17 tubers weighing 8 pounds 1 ounce. The tubers are dark red and the flesh pale yellow, mottled with a little red."

56746 to 56755. MALUS SYLVESTRIS Mill. Malaceæ. (*Pyrus malus* L.) Apple.

From Damascus, Syria. Scions presented by Charles E. Allen, American consul. Received March 29, 1923.

"These apple varieties are grown in the Plain of Zebdani, about 25 miles northwest of Damascus, at an altitude of a little above 3,500 feet. The apples of this region, though small, are known for their delicious flavor and bring good prices in the markets of Syria and Palestine. The methods of culture are primitive, and it is believed that the quality and size of the apples could be greatly improved by modern methods." (*Allen.*)

56746. No. 1. *Dershawi.*

56747. No. 4. *Hamod.*

56748. No. 6. *Feudy.*

56749. No. 7. *Fatima.*

56750. No. 8. *Lazkani.*

56751. No. 9. *Iraki.*

56752. No. 10. *Hamani.*

56753. No. 12. *Zebdani.*

56754. No. 13. *Kilatty.*

56755. No. 14. *Marius.*

56756 to 56759.

From Shantung, China. Scions sent in by K. M. Gordon, South Shantung Industrial and Agricultural School of the American Presbyterian Mission (North), at the request of C. A. Reed, Bureau of Plant Industry. Received March 23, 1923. Quoted notes by Mr. Gordon.

56756 to 56758. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

56756. "(No. 1.) From Cheng Chia Chuang, southwest of Tsingchowfu; the tree was one of the finest seen, and was said to have produced 600 catties (about 800 pounds) of nuts the previous season."

56757 and 56758. "From Cheng Chia Chuang district."

56757. "(No. 2.)"

56758. "(No. 3.)"

56759. PYRUS sp. Malaceæ. **Pear.**

"(No. 5.) *Ya li* (Duck pear). From 35 li (about 10 miles) northwest of Techow. The fruits are large, with thin smooth yellow skin and white juicy sweet flesh. This variety is a good keeper."

56760 to 56766.

From China. Scions sent in by K. M. Gordon, South Shantung Industrial and Agricultural School of the American Presbyterian Mission (North), at the request of C. A. Reed, Bureau of Plant Industry. Received March 26, 1923. Quoted notes by Mr. Gordon.

56760. AMYGDALUS PERSICA L. Amygdalaceæ. (*Prunus persica* Stokes.) **Peach.**

"(No. 4.) *Fei peach.* From 90 li (about 30 miles) northwest of Taianfu, Shantung. This is the most famous peach of China; it is a clingstone with the skin and flesh tinged with red."

56761. CASTANEA MOLLISSIMA Blume. Fagaceæ. **Chestnut.**

"(No. 7.) From Wan Chia Chang, 45 li (about 15 miles) northwest of Changli, Chihli. This tree, the finest I saw in China, is reported to produce very large sweet nuts."

56760 to 56766—Continued.

56762. DIOSPYROS KAKI L. f. Diospyraceæ. **Kaki.**

"(No. 3.) *Honey persimmon.* From Nan Tui Shou, 110 li (about 35 miles) southeast of Tsinanfu, Shantung. The skin slips off the small red fruits when they are ripe; they are very sweet."

56763 and 56764. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

"From Wan Chia Chuang, Chihli. This district probably produces the best walnuts of China."

56763. "(No. 7.)" 56764. "(No. 8.)"

56765 and 56766. PYRUS spp. Malaceæ. **Pear.**

56765. PYRUS sp.

"(No. 2.) *Laiyang.* A variety from Laiyang, Shantung. The fruit is large and dark skinned, and said to be very fine grained, sweet, and juicy."

56766. PYRUS sp.

"(No. 6.) *Peking White.* From Tungshan, 35 li (about 10 miles) northwest of Peking. The fruit is small and round with light lemon-yellow skin and fine-grained sweet flesh."

56767. CASTANEA sp. Fagaceæ. Chestnut.

From Tengyueh, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received January 16, 1923.

Received without data; possibly the same as S. P. I. No. 56768, which comes from the same general region.

56768. CASTANOPSIS HYSTRIX DC. Fagaceæ. Chestnut.

From southwestern Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received January 10, 1923.

"(No. 6716. October 24, 1922.) A lofty tree 80 to 100 feet tall, with trunks 3 feet in diameter, found in the pine forests of the Shweli Valley 40 li (about 12 miles) north of Lungling at an altitude of 6,000 feet. The smooth fawn-colored bark is flaky, and the straight ascending branches give the tree an oblong appearance. The burs are in long densely packed spikes, and the involucres are covered with long soft green spines. The small nuts are borne singly or in twos. This is one of the finest forest trees of the region. According to the natives the wood is very durable and never attacked by insects." (*Rock.*)

56769. SACCHARUM OFFICINARUM L. Poaceæ. Sugarcane.

From Honolulu, Hawaii. Seeds presented by H. P. Agee, director, Hawaiian Sugar-Planters' Association. Received March 28, 1923.

"*D 1135.* A sugarcane variety introduced for planting at Canal Point, Fla." (*C. O. Townsend.*)

56770 and 56771. TRIFOLIUM spp. Fabaceæ.

From Jonkoping, Sweden. Seeds presented by Prof. Hernfrid Witte, Swedish Moor-Culture Association. Received March 28, 1923. Quoted notes by Professor Witte.

Introduced for department specialists engaged in clover-breeding investigations.

56770. TRIFOLIUM HYBRIDUM L. **Alsike clover.**

"Genuine Swedish-grown alsike clover."

56770 and 56771—Continued.

56771. TRIFOLIUM PRATENSE L. **Red clover.**

"In Sweden this late-flowering type of red clover is grown for seed and hay throughout the country; the early-flowering type can be grown only in the South."

56772 to 56776. TRIFOLIUM spp. Fabaceæ.

From Copenhagen, Denmark. Seeds purchased from I. C. Bjerg Jensen. Received March 31, 1923.

Introduced for department specialists engaged in clover breeding.

56772 and 56773. TRIFOLIUM PRATENSE L. **Red clover.**

56772. *Hersnap.*

For previous introduction, see S. P. I. No. 56285.

56773. *Tystoffe No. 70.*

56774 to 56776. TRIFOLIUM REPENS L. **White clover.**

56774. *Morso.*

56775. *Stryno.*

56776. *Polonian White clover.*

56777 to 56779.

From Yunnan, China. Collected by J. F. Rock, Agricultural Explorer of the U. S. Department of Agriculture. Received January 18, 1923. Quoted notes by Mr. Rock.

56777. CASTANEA sp. Fagaceæ. **Chestnut.**

"(No. 6729. November 12, 1922.) Seeds collected in the hills back of Mengka."

56778. LILIUM sp. Liliaceæ. **Lily.**

"(November 8, 1922.) Bulbs of a wild lily 12 to 15 feet in height, found in forests of Quercus and Schima 1½ days' journey west of Tengyueh, on the Taping watershed, at an altitude of 8,000 feet. The leaves are long and lanceolate, and the large, ample panicles probably contain 10 or 12 flowers, which are said to be large and white."

56779. PHOTINIA sp. Malaceæ.

"(No. 6726. November 11, 1922.) Seeds of a tree 30 to 40 feet high with a dense crown, found on the plain and hills near Mengka, at 5,000 to 6,000 feet altitude. The leaves are pale green and lanceolate, and the flowers, said to be white, are in large panicles 5 inches across. In November the tree is one mass of deep orange-red fruits."

56780 and 56781. NEPHELIUM spp. Sapindaceæ.

From Buitenzorg, Java. Seeds presented by the director, Botanic Garden. Received March 3, 1923.

56780. NEPHELIUM LAPPACEUM L. **Rambutan.**

"This well-known fruit is probably a native of the Malayan Peninsula. The fruit is popular both with Europeans and natives alike and claims a place amongst the best fruits of the East. The tree is of medium size and, when bearing a good crop of fruit, one of the most ornamental of trees. The small green flowers are produced in loose panicles and are unisexual. Trees having all male flowers are often met with; such trees, of course, bearing no fruit. The flowering period varies somewhat with the season, but usually the tree blooms in April and May and again to a lesser extent in September and October. The fruit takes about four months to mature, and the main crop is generally ripe in August and September, to be followed by another crop toward the end of the year. As with most fruits, the crop varies in quantity; some years such enormous crops of fruit are produced that a difficulty is experienced in disposing of them. A considerable number of slight variations are to be noticed on the rambutans grown here. The color of the fruit varies from yellow to crimson. There is much difference in the flavor of the fruit; some are acid while others are sweet and of a delicious flavor. Also the quantity of flesh on the stones varies considerably. In the best varieties the flesh comes away easily from the seed. The fruit is usually eaten raw as dessert, but it can also be stewed or made into a preserve.

"The rambutan will grow in most soils, but responds well to good cultivation. The writer has in mind a certain tree which was long unproductive; by judicious management this tree was brought into fine condition and bore quantities of fruit yearly. In this instance a trench was dug round the tree at about 4 feet radius from the trunk. A charge of dynamite was employed to loosen the subsoil and the trench refilled with a compost of good soil and well-rotted cow manure. Clearly the rambutan is a tree that likes deep cultivation and an open soil. It may be raised from seed sown under shade, though it appears highly desirable to propagate the best varieties by grafting on seedling stocks. The Malays frequently raise young trees by a process of marcottage termed 'tut' in the Malay language. The advantages of this method are several and have been explained previously. The rambutan is a fruit worthy of the plant breeder's attention. By selection and good cultivation it seems quite possible that well-flavored varieties might in time replace the poor kinds frequently met with." (*J. N. Milsum, Fruit Culture in Malaya, p. 79.*)

56781. NEPHELIUM MUTABILE Blume. **Pulasan.**

"*Pulasan.* A Malayan tree which is similar to the rambutan in appearance, but differs in the fruit and in the leaves being gray beneath. The fruit is larger than that of the rambutan and is a deep purple-brown with short blunt processes. According to Ridley, the flavor is decidedly superior to that of the latter fruit." (*Macmillan, Handbook of Tropical Gardening, 2d ed., p. 176.*)

For previous introduction, see S. P. I. No. 42385.

56782 to 56784. ORYZA SATIVA L. Poaceæ. **Rice.**

From Seoul, Chosen. Seeds presented by the director, Department of Agriculture and Industry. Received March 20, 1923.

Early-maturing varieties introduced for department specialists engaged in rice-breeding experiments.

56782. *Kokuryomi Yaka.*

56783. *Tamanishiki.*

56784. *Waseshinliki.*

56785. MUSA GILLETII Wildem. Musaceæ. **Banana.**

From Kisantu, Belgian Congo. Seeds presented by Père J. Gillet. Received March 21, 1923.

"From Lower Uele." (*Gillet.*)

For previous introduction and description, see S. P. I. No. 56485.

56786 to 56789.

From Burringbar, New South Wales. Seeds presented by B. Harrison. Received March 26, 1923. Quoted notes by Mr. Harrison, unless otherwise stated.

56786. ALLOTEROPSIS SEMIALATA (R. Br.) Hitchc. Poaceæ. **Cockatoo grass.**

"A native grass which becomes 2 to 3 feet high in sandy soil."

"Cockatoo grass is excellent pasturage and of good seeding habit. It is leafy at the base." (*Roland McKee.*)

For previous introduction, see S. P. I. No. 41751.

56787. CUDRANIA JAVANENSIS Trecul. Moraceæ.

"*Cocklespur*. A thorny trailing shrub which should prove useful in making an almost impenetrable hedge."

The fruit, which is edible and of pleasant flavor, is irregular in shape and about as large as a small custard-apple.

For previous introduction, see S. P. I. No. 40618.

56788. DAVIDSONIA PRURIENS F. Muell. Cunoniaceæ.

56786 to 56789—Continued.

For previous introduction and description, see S. P. I. No. 56146.

56789. PASPALUM SCROBICULATUM L. Poaceæ. **Koda millet.**

"A native grass about a foot high, relished by all kinds of livestock."

An erect annual grass averaging 2 feet in height, native to India, where it is also extensively cultivated for the edible grain. The grain is poisonous, however, unless kept for a number of years. Cattle are fond of the grass when it is young; at the time of ripening it is poisonous to stock.

For previous introduction, see S. P. I. No. 51317.

56790. GOSSYPIUM sp. Malvaceæ. **Kidney cotton.**

From Horqueta, Paraguay. Seeds presented by Thomas R. Gwynn. Received February 26, 1923.

"*Mandiyu*, single seeded. Especially strong and used for hammocks." (*Gwynn.*)

ACC. 4959

Acacia discolor, 56571.
elata, 56559.
fasciculifera, 56183.
juncifolia, 56184.
linifolia prominens, 56560.
longifolia sophorae, 56572.
myrtifolia, 56573.
saligna, 56561.
sp., 56495.
Acer caudatum, 56453.
davidi, 56288.
hookeri, 56454.
pectinatum, 56455.
sikkimense, 56456.
spp., 56289–56291.
sterculiaceum, 56399.
villosum. See *A. sterculiaceum*.
Actinidia chinensis, 56608.
Aesculus wilsonii, 56390.
Agropyron cristatum, 56501.
intermedium, 56502.
Alangium chinense, 56528.
Alder, *Alnus nepalensis*, 56636.
Aleurites fordii, 56666.
montana, 56676.
Alfalfa, *Medicago sativa*, 56446.
Allium sp., 56596.
Alloteropsis semialata, 56786.
Almond, *Amygdalus communis*, 56177–56178.
Alnus nepalensis, 56636.
Amaranthus caudatus, 56611.
sp., 56496.
Amygdalus communis, 56177–56178.
persica, 56760.
Apple, *Malus magdeburgensis*, 56522.
Malus sylvestris:
Aldenhamensis, 56693.
Court pendu, 56606.
Dershawi, 56746.
Fatima, 56749.
Feudy, 56748.
Hamani, 56752.
Hamod, 56747.
Iraki, 56751.
Kilatty, 56754.
Lazkani, 56750.
Marius, 56755.
Rienette de Canada gris, 56607.
Zebdani, 56753.
Malus yunnanensis, 56320–56321, 56324.
See also *Malus* spp.
Arachis hypogaea, 56391.
Arbutus canariensis, 56529.
Ash, mountain, *Sorbus* spp., 56373–56376.
Asparagus africanus, 56483.
Atalantia glauca. See *Eremocitrus glauca*.
Avena sterilis, 56503.

Bactris utilis. See *Guilielma utilis*.
Bamboo, *Dendrocalamus sikkimensis*, 56457.
Dendrocalamus strictus, 56532.
Banana, *Musa gilletii*, 56485, 56785.
Barberry, *Berberis dictyophylla*, 56293.
Barley, *Hordeum distichon palmella*, 56609.
Hordeum intermedium haxtoni, 56610.
Bean, common, *Phaseolus vulgaris*, 56582–56585.
Lima, *P. lunatus*, 56443, 56578–56581, 56594.
mung, *P. aureus*, 56428.
Scarlet Runner, *P. coccineus*, 56442.
soy. See Soybean.
Beckmannia erucaeformis, 56504.
Bentinckia nicobarica, 56530.
Benzoin sp., 56292.
Berberis dictyophylla, 56293.
Berseem, *Trifolium alexandrinum*, 56630.
Betula bhojpattra. See *B. utilis*.
utilis, 56400.
Billardiera longiflora, 56562.
Birch, *Betula utilis*, 56400.
Blackberry, Pollard's, *Rubus* sp., 56692.
Bluegrass, Kentucky, *Poa pratensis*, 56514.
Box, *Buxus* sp., 56295.
Brachychiton discolor, 56185.
Brassica spp., 56597–56599.
Bromus unioloides, 56638.
variegatus, 56505.
Bucklandia populnea, 56637.
Buddleia forrestii, 56294.
Buxus sp., 56295.

Cactus, *Pereskia bleo*, 56499, 56500.
Candollea graminifolia, 56563.
Canôco, *Triticum durum* × *turgidum*, 56260.
Cassia brewsteri, 56452.
tomentella, 56186.
Castanea spp., 56439, 56488, 56767, 56777.
mollissima, 56392–56397, 56537–56541, 56761.
Castanopsis argentea, 56461.
delavayi, 56297, 56677.
hystrix, 56768.
spp., 56296, 56298–56300, 56472, 56489.
Casuarina suberosa, 56564.
Catjang, *Vigna cylindrica*, 56498, 56595.
Cervicina gracilis, 56565.
Chaetochloa italica, 56398.
Cherry, *Prunus* sp., 56335.
Chestnut, *Castanea mollissima*, 56392–56397, 56537–56541, 56761.
Castanea spp., 56439, 56488, 56767, 56777.
Castanopsis argentea, 56461.
delavayi, 56297, 56677.
hystrix, 56768.
spp., 56296, 56298–56300, 56472, 56489.
Citrus grandis, 56176.
Clover, *Trifolium alpestre*, 56671.
Trifolium elegans, 56672.
johnstoni, 56458.
ochroleucon, 56673.
pannonicum, 56674.
physodes, 56675.
squarrosum, 56272.
alsike, *Trifolium hybridum*, 56770.
crimson, *Trifolium incarnatum*, 56679, 56680.
Japanese, *Lespedeza striata*, 56283.
red, *Trifolium pratense*, 56179, 56181, 56182, 56285, 56440, 56441, 56536, 56616, 56635, 56661, 56681–56684, 56771–56773.
strawberry, *Trifolium fragiferum*, 56551.
white, *Trifolium repens*, 56286, 56287, 56774–56776.
Cocklespur, *Cudrania javanensis*, 56787.
Coix lacryma-jobi ma-yuen, 56193–56195.
Coral tree, *Erythrina vespertilio*, 56188.
Cordia rothii, 56531.
Coriander, *Coriandrum sativum*, 56600.
Coriandrum sativum, 56600.
Corn, *Zea mays*, 56447–56449, 56701–56709.
Zea mays, Gele Menado maïs, 56663.
Hickory King, 56640.
Iowa Silver Mine, 56641.
Ladysmith, 56642.
Lao-lai-tsu (white dent), 56706.
Longfellow, 56708.
Madoera maïs, 56662.
Maíz blanco, 56447.
Maíz jesuita, 56448.
Maíz zhima, 56449.
Ma-ya-tsou (red dent), 56707.
Natal 8-row Flint, 56643.
Palins Cornflake, 56644.
Potchefstroom Pearl, 56645.
Reid Yellow Dent, 56646.
Salisbury, 56647.
Stevens Waushacum, 56709.
Ten-row Yellow Flint, 56639.
White St. Croix maïs, 56605.
Cornel, Bentham's, *Cornus capitata*, 56301, 56302.
Cornus capitata, 56301–56302.
Corylus spp., 56401–56403, 56490.
Cotoneaster frigida, 56450.
spp., 56303, 56304.
Cotton, kidney, Mandiyu, *Gossypium* sp., 56790.
Cowpea, *Vigna sinensis*, 56435–56437, 56444, 56589, 56590.

Cudrania javanensis, 56787.
Cupressus sp., 56305.
Currant, *Ribes* spp., 56365, 56366.
Curuba, *Tacsonia mollissima*, 56593.
Cypress, *Cupressus* sp., 56305.
Cyrtanthus contractus, 56198.

Dahlia maxonii, 56664, 56665.
Danthonia semiannularis, 56566.
Datura innoxia, 56462.
Davidsonia pruriens, 56146, 56788.
Dendrocalamus sikkimensis, 56457.
strictus, 56532.
Deutzia spp., 56306, 56307.
Dewberry, Newberry, *Rubus* sp., 56691.
Dioscorea trifida, 56660.
Diospyros kaki, 56389, 56542, 56762.
spp., 56308, 56310.

Emmer, *Triticum dicoccum*, 56234.
Eremocitrus glauca, 56700.
Erythrina tomentosa, 56187.
vespertilio, 56188.
Eucalyptus rariflora, 56189.
regnans, 56567.
staigeriana, 56147.
virgata, 56574.
Euonymus porphyreus, 56311.
spp., 56312, 56313.
Euterpe edulis, 56463.
Eutrema wasabi. See *Wasabia pungens*.
Evodia accedens, 56190.
Exocarpus cupressiformis, 56568.

Feathergrass, *Stipa pennata*, 56517.
Festuca elatior, 56506.
ovina, 56507.
novo-zelandiae, 56388.
Ficus capensis, 56533.
carica, 56631.
Fig, Dottato, *Ficus carica*, 56631.
Filbert, *Corylus* spp., 56401–56403, 56490.
Firethorn, *Pyracantha gibbsii*, 56451, 56694.
Flindersia oxleyana, 56191.
Fragaria spp., 56153–56157, 56159–56175.

Garcinia gibbsiae, 56698.
mangostana, 56667.
mestoni, 56699.
Gladiolus segetum, 56629.
Glycine hispida. See *Soja max*.
Gossypium sp., 56790.
Grapefruit, *Citrus grandis*, 56176.
Grass, *Agropyron cristatum*, 56501.
Agropyron intermedium, 56502.
Beckmannia erucaeformis, 56504.
Bromus unioloides, 56638.
variegatus, 56505.
cockatoo, *Alloteropsis semialata*, 56786.
feather. See Feathergrass.
fescue tussock, *Festuca ovina novo-zelandiae*, 56388.
Festuca elatior, 56506.
ovina, 56507.
guinea, *Panicum maximum*, 56284.
Hordeum maritimum, 56508.
nodosum, 56509.
jitniak, *Agropyron cristatum*, 56501.
Kentucky blue, *Poa pratensis*, 56514.
Koeleria gracilis, 56510.
Lolium marschallii, 56511.
Melica ciliata, 56512.
molasses, *Melinis minutiflora*, 56484.
Panicularia fluitans, 56513.
Phalaris brachystachys, 56697.
Stipa capillata, 56515.
pennata, 56517.
lessingiana, 56516.
pubescens, 56569.
semibarbata, 56570.
wallaby, *Danthonia semiannularis*, 56566.
Guilielma utilis, 56158, 56180.

Holcus sorghum, 56404, 56612, 56613.
Holly, *Ilex* sp., 56314.
Hordeum distichon palmella, 56609.
intermedium haxtoni, 56610.
maritimum, 56508.
nodosum, 56509.
Horsechestnut, *Aesculus wilsonii*, 56390.
Hydnocarpus alpina, 56445.

Ilex sp., 56314.
Indigo, *Indigofera australis*, 56575.
Indigofera australis, 56575.
pendula, 56315.
Ipomoea batatas, 56710–56745.
Ironbark, lemon-scented; *Eucalyptus staigeriana*, 56147.
Tasmanian, *Eucalyptus virgata*, 56574.

Juglans mandshurica, 56405–56408.
regia, 56409–56425, 56543–56549, 56756–56758, 56763, 56764.
sp., 56426.

Kaki, *Diospyros kaki*, 56389, 56542, 56762.
Kennedia prostrata, 56576.
Keteleeria sp., 56316.
Koeleria gracilis, 56510.
Kumquat, Australian desert, *Eremocitrus glauca*, 56700.

Lactuca sativa, 56601.
Lens esculenta. See *Lentilla lens*.
Lentil, *Lentilla lens*, 56427.
Lentilla lens, 56427.
Lespedeza bicolor intermedia, 56523.
bicolor sieboldi, 56524.
juncea, 56525.
sericea, 56526.
pilosa, 56527.
striata, 56283.
Lettuce, *Lactuca sativa*, 56601.
Ligustrum ionandrum, 56317.
spp., 56318, 56473.
Lilium spp., 56149, 56778.
Lily, *Lilium* spp., 56149, 56778.
Lindera sp. See *Benzoin* sp.
Litsea sp., 56319
Lolium marschallii, 56511.
Lotus edulis, 56668.
requieni, 56669.
tetragonolobus, 56670.

Malus magdeburgensis, 56522.
spp., 56150, 56275, 56322, 56323, 56325, 56459, 56460, 56474, 56475.
sylvestris, 56606, 56607, 56693, 56746–56755.
yunnanensis, 56320, 56321, 56324.
Mangifera indica, 56648, 56659.
Mango, *Mangifera indica*:
Augusta, 56648.
Carlota, 56649
Familia, 56650, 56651.
Itamaraca, 56652–56654.
Itaparica, 56655, 56656.
Julieta, 56657, 56658.
Melifera, 56659.
Mangosteen, *Garcinia mangostana*, 56667.
Maple, *Acer caudatum*, 56453.
Acer davidi, 56288.
hookeri, 56454.
pectinatum, 56455.
sikkimense, 56456.
spp., 56289–56291.
sterculiaceum, 56399.
Marlea begoniaefolia. See *Alangium chinense*.
Ma-yuen, *Coix lacryma-jobi ma-yuen*, 56193–56195.
Meconopsis integrifolia, 56326.
rudis, 56327.
Medicago sativa, 56446.
Meibomia spp., 56387, 56577.
Melica ciliata, 56512.
Melinis minutiflora, 56484.
Millet, *Chaetochloa italica*, 56398.
koda, *Paspalum scrobiculatum*, 56789.
Mu-oil tree, *Aleurites montana*, 56676.
Musa gilletii, 56485, 56785.

Nageia elongata, 56196.
thunbergii, 56197.
Nathusia alata, 56487.
Nephelium lappaceum, 56780.
mutabile, 56781.
Nicotiana rustica, 56614.

Oak, *Quercus* spp., 56348–56354, 56492.
Oat, wild, *Avena sterilis*, 56503.
Olea spp., 56328–56329.
Onion, tsung, *Allium* sp., 56596.
Oryza sativa, 56266–56271, 56552–56557, 56782–56784.

Palm, *Bentinckia nicobarica*, 56530.
Euterpe edulis, 56463.
Panicularia fluitans, 56513.
Panicum maximum, 56284.
Pappea capensis, 56148.
Paspalum scrobiculatum, 56789.
Peach, *Amygdalus persica*, 56760.
Peanut, *Arachis hypogaea*, 56391.
Pear, *Pyrus* spp.:
Beurre Bedford, 56690.
Laiyang, 56765.
Peking White, 56766.
Superb, 56689.
Ya li (Duck pear), 56759.
See also *Pyrus* spp.
Pejibaye, *Guilielma utilis*, 56158, 56180.
Pereskia bleo, 56499, 56500.
Persimmon, *Diospyros* spp., 56308–56310.
Phalaris brachystachys, 56697.
Phaseolus adenanthus, 56685.
aureus, 56428.
coccineus, 56442.
lunatus, 56443, 56578–56581, 56594.
spp., 56586–56588, 56686.
vulgaris, 56582–56585.
Phleum pratense, 56615.
Photinia spp., 56276, 56330, 56331, 56779.
Pieris sp., 56332.
Pine, *Pinus armandi*, 56333.
white-barked, *P. bungeana*, 56429.
Pinus armandi, 56333.
bungeana, 56429.
Pistache, *Pistacia vera*, 56558.
Pistacia vera, 56558.
Poa pratensis, 56514.
Podocarpus elongata. See *Nageia elongata*.
thunbergii. See *Nageia thunbergii*.
Polyalthia longifolia, 56282.
Potato, *Solanum tuberosum*, 56678.
sweet, *Ipomoea batatas*, 56710–56745.
Primrose, *Primula forrestii*, 56334.
Primula forrestii, 56334.
Privet, *Ligustrum* spp., 56318, 56473.
Ligustrum ionandrum, 56317.
Prunus amygdalus. See *Amygdalus communis*.
persica. See *Amygdalus persica*.
sp., 56335.
Pulasan, *Nephelium mutabile*, 56781.
Pyracantha gibbsii, 56451, 56694.
Pyrus calleryana, 56687, 56688.
malus. See *Malus sylvestris*.
pashia, 56336.
spp., 56151, 56152, 56277–56280, 56337–56347, 56476, 56491, 56689, 56690, 56759, 56765, 56766.

Quercus spp., 56348–56354, 56492.

Radish, *Raphanus sativus*, 56192, 56602.
Rambutan, *Nephelium lappaceum*, 56780.
Raphanus sativus, 56192, 56602.
Raspberry, *Rubus* spp., 56145, 56273–56274.
Rhododendron delavayi, 56355.
fortunei, 56356.
heliolepis, 56357.
spp., 56359–56364.
taliense, 56358.
Ribes spp., 56365, 56366.
Rice, *Oryza sativa*, 56266–56271, 56552–56557, 56782–56784.
Rosa spp., 56281, 56367, 56368, 56477.
Rose, *Rosa* spp., 56281, 56367, 56368, 56477.
Rubus fraxinifolius, 56273.
lutescens, 56369.
rosaefolius, 56274.
spp., 56145, 56691, 56692.
Rumex abyssinicus, 56486.

Saccharum officinarum, 56464–56471, 56478–56482, 56617–56628, 56632, 56769.
Schizandra axillaris, 56370.
Schrebera alata. See *Nathusia alata*.
Setaria italica. See *Chaetochloa italica*.
Smilax spp., 56371, 56372.
Soja max, 56430–56434.
Solanum cyananthum, 56534.
sp., 56591.
tuberosum, 56678.
Sorbus spp., 56373–56376.
Sorghum, *Holcus sorghum*, 56404, 56612, 56613.
Sorghum vulgare. See *Holcus sorghum*.
Soybean, *Soja max*, 56430–56434.
Spergula arvensis, 56550.
Spinach, *Spinacia oleracea*, 56603.
Spinacia oleracea, 56603.
Spurry, *Spergula arvensis*, 56550.
Stachys sieboldi, 56604.
Sterculia discolor. See *Brachychiton discolor*.
Stipa capillata, 56515.
pennata, 56517.
lessingiana, 56516.
pubescens, 56569.
semibarbata, 56570.
Stranvaesia davidiana, 56695–56696.
Strawberry, *Fragaria* spp., 56153–56157, 56159–56175.
Stylidium graminifolium. See *Candollea graminifolia*.
Sugarcane, *Saccharum officinarum*, 56464–56471, 56478–56482, 56617–56628, 56632, 56769.

Tacsonia lanata, 56592.
mollissima, 56593.
Taraktogenos kurzii, 56633.
Tecoma garrocha, 56535.
Thorn, fire. See Firethorn.
Tibouchina sp., 56497.
Tilia sp., 56377.
Timothy, *Phleum pratense*, 56615.
Tobacco, *Nicotiana rustica*, 56614.
Trifolium alexandrium, 56630.
alpestre, 56671.
elegans, 56672.
fragiferum, 56551.
hybridum, 56770.
incarnatum, 56679, 56680.
johnstoni, 56458.
ochroleucon, 56673.
pannonicum, 56674.
physodes, 56675.
pratense, 56179, 56181–56182, 56285, 56440, 56441, 56536, 56616, 56635, 56661, 56681–56684, 56771–56773.
repens, 56286–56287, 56774–56776.
squarrosum, 56272.
Triticum aestivum, 56199–56231.
aestivum × *durum*, 56232.
× *polonicum*, 56233.
cylindricum, 56518.
dicoccum, 56234.
durum, 56235–56259.
× *turgidum*, 56260.
monococcum, 56519.
ovatum, 56520.
polonicum, 56261.
triunciale, 56521.
turgidum, 56262–56265.
vulgare. See *T. aestivum*.
Tung-oil tree, *Aleurites fordii*, 56666.
Undetermined, 56386, 56494.

Vaccinium sp., 56378.
Viburnum spp., 56379–56385.
Vigna cylindrica, 56498, 56595.
sinensis, 56435–56437, 56444, 56589, 56590.

Wahlenbergia gracilis. See *Cervicina gracilis*.
Walnut, *Juglans regia*, 56409–56425, 56543–56549, 56756–56758, 56763, 56764.
Juglans sp., 56426.
Manchurian, *Juglans mandshurica*, 56405–56408.
Wasabia pungens, 56438.
Wheat, common, *Triticum aestivum*:
Amarello de barba branca × Ribeiro, 56218.
× Ribeiro × Ribatejano, 56231.
Amarello de barba preta × Ribeiro, 56219.
× Ribeiro (Sado), 56220.
Anafil × Galêgo barbado (Belém), 56221.
Aurora, 56209.
Barbella, 56199, 56201.
× Santa Martha, 56222.
Beirão, 56202.
Fucense × Môcho de espiga branca, 56215.
Galêgo barbado, 56203.
× Fucense, 56223.
× Lobeiro (Ideal), 56224.
rapado, 56210.
× Vermeljoilo, 56214.
Gentil rosso, 56211.
Lobeiro × Barbella, 56225.
× Galêgo barbado, 56226.
× Ribeiro, 56227.

Wheat, common—Continued.
Manitoba, 56212.
Môcho de espiga quadrada, 56213.
Portuguez, 56204.
Precoce italiano, 56205.
Ribeiro, 56206.
Rieti, 56200, 56207.
× Galêgo rapado, 56216.
× Môcho de espiga branca, 56217.
Santa Martha × Barbella, 56228.
× Fucense, 56229.
× Ribeiro, 56230.
Temporão de Coruche, 56208.
Wheat, durum, *Triticum durum:*
Amarello de barba branca, 56235.
preta, 56242.
Anafil, 56243.
Aza de Côrvo, 56244.
Branco, 56236.
Candial, 56237.
Cascalvo, 56245.
Da Terra, 56238.
Durazio mollar, 56255.
rijo, 56254.
Javardo, 56246.
Lobeiro, 56239.
× Branco, 56259.
Marquez, 56247.
Monjil, 56248.
Mourisco, 56249.
Pombinho, 56250.
Rapinegro, 56251.
Rubião, 56252.
Santa Martha, 56240.
Tremez molle, 56258.
preto, 56256.
rijo, 56257.
Vermeljoilo, 56241.
Vermelho fino, 56253.
Wheat, hybrid, *Triticum aestivum* × *durum:*
Anafil × Môcho de espiga branca, 56232.
Triticum aestivum × *polonicum:*
Rieti × Galêgo barbado × Gigantil, 56233.
Wheat, Polish, Gigantil, *Triticum polonicum*, 56261.
Wheat, poulard, *Triticum turgidum:*
Alexandre, 56264.
Egypcio, 56265.
Milagre, ou Sete-espigas, 56262.
Sicilio, 56263.
Wheat, wild, *Triticum monococcum*, 56519.

Yampi, *Dioscorea trifida*, 56660.
Yang-tao, *Actinidia chinensis*, 56608.

Zea mays, 56447–56449, 56605, 56639–56647, 56662, 56663, 56701–56709.
Ziziphus spp., 56493, 56634.

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
10 CENTS PER COPY

▽